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Governance of ICT Standardization: Due Process in Technocratic Decision-Making

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ABSTRACT: In the world of continuous globalization, technical standards and industry norms play a crucial role in transnational economic development. For the past few decades, increased digitalization and emergence of new technologies gave due prominence to ICT standards: our future is closely linked to the Internet of Things and 5G technologies that are expected to penetrate an enormous range of economic sectors and therefore affect our quotidian life. At the same time, the introduction of these new technologies is accompanied by concerns such as privacy and security. In particular, security has been subjected to a wider political debate recently, largely fueled by national security concerns voiced by Western governments regarding the involvement of China-based companies in the standardization of 5G technologies. In this context, this paper discusses whether the current regulatory landscape can address the variety of concerns raised in relation to the development of ICT standards through well-established procedural principles for standard-setting, such as openness, transparency, and consensus, and whether these principles ensure that ICT standardization remains balanced and inclusive, while delivering cutting-edge technological solutions.

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I. Introduction

Industry regulation through voluntary standards has sparked the

interest of lawyers and political scientists for quite some time. In general, standards reign in domains characterized by scientific complexity and weak State regulation. In the Information and Communications Technologies ("ICT") sector, traditionally driven by high-tech companies and business associations, standards prescribe methods applied in electronic devices and enable connections between networks, interfaces, and products of different vendors.[1] Examples include the standardization of Internet and web protocols, the development of wireless connectivity standards, and the deployment of cellular mobile networks. In spite of their intrinsic voluntary nature, ICT standards serve as blueprints for manufacturers to achieve compatibility with other products, and lead to economies of scale and generate network effects.[2]

Notwithstanding their commercial and practical advantages, ICT standards may sometimes result in economic or administrative burdens by pushing up compliance costs for companies.[3] To illustrate, measures related to the prevention of cyber-attacks or espionage, such as mandatory security certification of network elements,[4] or rules prohibiting US federal agencies from purchasing telecommunications equipment and services supplied by Chinese manufacturers,[5] are gradually entering into the wider arena of international trade. More recently, a number of Western governments raised serious security concerns regarding the participation of Huawei, China-based manufacturer of consumer electronics, in the development of the 5th Generation standards for

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1 Mark A. Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CALIF. L. REV. 1889, 1898 (2002); Raymund Werle, *Standards in the International Telecommunications Regime* 8 (Hamburg Inst. of Int'l Econ., Working Paper No. 157, 2001); NILS BRUNSSON & BENGT JACOBSSON, A WORLD OF STANDARDS 4–5 (2000).

2 Patrick D. Curran, *Standard-Setting Organizations: Patents, Price Fixing, and Per Se Legality*, 70 U. CHI. L. REV. 983, 987 (2003).

3 *See* Robert W. Staiger & Alan O. Sykes, *International Trade, National Treatment, and Domestic Regulation*, 40 J. LEGAL STUD. 149, 152 (2011).

4 Comm. on Tech. Barriers to Trade, *Note by the Secretariat: Minutes of the Meeting of 9–10 March 2016*, ¶ 2.2.3.3, WTO Doc. G/TBT/M/68 (May 12, 2016) (discussing India's deviation from the Common Criteria Recognition Arrangements for testing procedures).

5 Defending U.S. Government Communications Act, H.R. 4747, 115th Cong. (2018); Federal Acquisition Regulation: Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment, 84 Fed. Reg. 40,216 (Aug. 13, 2019) (to be codified at 48 C.F.R. pts. 1, 3, 12, 13, 39, & 52).

cellular mobile communications ("5G").[6] These concerns are aggravated by the fact that 5G networks will form a cornerstone of the Internet of Things ("IoT")—a digitalized system of interconnected hardware devices, networks and objects, expected to restructure and replace current economic and social synergy—placing ICT standardization at the forefront of Western political agendas.[7]

Discussions on national security concerns around Huawei's involvement in IoT standardization fit into the wider debate on whether and how the development of ICT standards takes into account the growing variety of interests affected by emerging technologies.[8] In a broader sense, it prompts the question whether the current regulatory landscape is sufficient to address concerns of legitimacy, accountability, and validity arising from the increased regulatory and practical importance of industry governance, a question that is especially intriguing from a legal standpoint.

Against this backdrop, this paper aims to explore the prospects of addressing the balance of interests in ICT standardization through the applicable procedural principles. Building upon the relevant scholarship in the field of transnational private regulation, Section II preliminarily restates the role of industry associations and their voluntary standards in transnational rule-making, then Section III discusses the challenges currently encountered in ICT

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6 *See, e.g.*, Kiran Stacey & Yuan Yang, *Huawei to Sue U.S. Government Over Equipment Ban*, FIN. TIMES (Mar. 4, 2019), https://www.ft.com/content/c14e07d6-3e8e-11e9-9bee-efab61506f44 [https://perma.cc/Q73N-MPKV] (describing Huawei's lawsuit against the US government ban on the purchase of equipment from Huawei); *America and its Allies Disagree on Huawei*, THE ECONOMIST (Feb. 21, 2019), https://www.economist.com/business/2019/02/21/america-and-its-allies-disagree-on-huawei [https://perma.cc/XZJ4-8E7R] (describing the different approaches taken by Western governments to security concerns about Huawei).

7 *See* DIRECTORATE-GEN. OF THE EUR. COMM., *European Digital Single Market Strategy, Digital Economy & Society in the EU: A Browse Through Our Online World in Figures* (2018), https://ec.europa.eu/eurostat/cache/infographs/ict/bloc-4.html [https://perma.cc/HQ2G-8CLG]; *see also* The FCC's 5G FAST Plan, FED. COMM. COMM'N, https://www.fcc.gov/5G [https://perma.cc/8CEZ-CXKV] (The Federal Communications Commission's strategy to "Facilitate America's Superiority in 5G Technology.").

8 U.S. DEP'T OF COMMERCE, NISTIR 8074, INTERAGENCY REPORT ON STRATEGIC U.S. GOVERNMENT ENGAGEMENT IN INTERNATIONAL STANDARDIZATION TO ACHIEVE U.S. OBJECTIVES FOR CYBERSECURITY (2015), https://nvlpubs.nist.gov/nistpubs/ir/2015/NIST.IR.8074v1.pdf [https://perma.cc/CDC4-M5P3].

standardization. The main part of this paper, Section IV, analyzes procedural safeguards that apply to standard-setting, and that are derived from the three major regulatory frameworks for standards development offered by the World Trade Organization ("WTO"), the United States ("US") and the European Union ("EU"). Ultimately, Section V evaluates whether the current procedural safeguards for industry standardization are indeed relevant in the context of ICT standardization and are capable of addressing the challenges of modern standard-setting faced by the industry, governments, and civil society.

II. Transnational Dimension of Industry Standardization

ICT standards are growing in their regulatory importance, and concerns associated with them are not limited to industry players, but also relate to public interest and civil society. Before addressing these concerns, however, one needs to understand the different types of standards and organizations developing those standards, and how private standards steer the behavior of market actors and affect a broad spectrum of stakeholders. This section addresses standard-setting by industry organizations in the context of transnational private regulation and focuses on institutional aspects of standardization and the normative power of private standards.

A. Regulation by Industry and Private Actors

The idea of rule-making as a myriad of global and transnational regulatory schemes operating in the shadow of traditional legislative arrangements has for a long time appealed to legal scholars.[9] Rules, practices and processes laid down by sector-specific communities and that produce strong distributional effects between private stakeholders are commonly referred to as transnational private regulation.[10] While relying on general consent, participatory commitment and mutual monitoring, transnational private regulation is marked by the reallocation of the regulatory power from domestic governments to private actors operating at the global

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9 *See, e.g.*, Colin Scott et al., *The Conceptual and Constitutional Challenge of Transnational Private Regulation*, 38 J. L. & SOC'Y 1, 1 (2011); *see also* Kenneth W. Abbott & Duncan Snidal, *Hard and Soft Law in International Governance*, 54 INT'L. ORG. 421, 421 (2000).

10 Fabrizio Cafaggi, *New Foundations of Transnational Private Regulation*, 38 J. L. & SOC'Y 20, 20–21 (2011) [hereinafter Cafaggi].

level.[11] In this regard, it contrasts starkly with the traditional Westphalian system of law, where the role of private actors was significantly limited,[12] but also diverges from other forms of private rules, including custom.[13]

The design and enforcement of transnational regulatory norms takes place in voluntary organizations or industry associations, commonly not subjected to governmental control.[14] Arising concerns about democratic deficit, illegitimacy, and unaccountability of transnational private regulation are addressed by peer-monitoring mechanisms or market-driven and reputational measures.[15] Once moved into global regulatory arena, transnational private regulation can arguably be "legitimized" through the establishment of institutional and procedural settings.[16] To that end, similar to global rule-making, it often relies on procedural principles rooted in national administrative laws, such as due process, transparency, participation, and review.[17]

The enormous benefit of transnational private regulation is its ability to solve collective action failures and to find compromises between conflicting interests.[18] Since transnational regulation offers more advantages than an uncoordinated action by all actors, it is also prone to escaping governmental influence and is guided by technocratic decision-making.[19] Over the past decades, transnational private regimes grew in importance due to the

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11 *Id.* at 21.

12 *Cf.* Benedict Kingsbury et al., *The Emergence of Global Administrative Law*, 68 L. & CONTEMP. PROBS. 15, 20–23 (2005) [hereinafter Kingsbury] (describing five types of globalized administration).

13 Cafaggi, *supra* note 10, at 22.

14 Kingsbury, *supra* note 12, at 16.

15 Cafaggi, *supra* note 10, at 47.

16 *See generally* Gralf-Peter Calliess & Moritz Renner, *Between Law and Social Norms: The Evolution of Global Governance*, 22 RATIO JURIS 260 (2009) (describing a framework for understanding global governance through "legalisation" [sic] and "constitutionalisation").

17 Carol Harlow, *Global Administrative Law: The Quest for Principles and Values*, 17 EUR. J. INT'L L. 187, 201 (2006).

18 Cafaggi, *supra* note 10, at 48–49.

19 *Cf.* Martin Shapiro, *Deliberative, Independent Technocracy v. Democratic Politics: Will the Globe Echo the EU?*, 68 L. & CONTEMP. PROBS. 341, 349 (2005) (comparing transnational regimes to cartels, where members join and stay because the existence of a joint initiative offers more advantages, despite a constant temptation to seek self-interest).

emergence of new policy areas and advancement of industry domains that have typically been under the hegemony of private actors, or where States fall short on knowledge and expertise.[20] Examples range from the diamond industry and private prisons to professional societies and Internet-routine.[21] Implementation of such normative schemes still depends on a large number of factors, including the balance of power in a particular sector and the willingness of stakeholders to reach compromises.[22]

Against this backdrop, standardization is considered a form of transnational private regulation, since specifications created by industry-driven Standard-Setting Organizations ("SSOs") are often transformed into norms that serve public purposes.[23] Accordingly, technical standards adopted by SSOs should ideally strike a balance between profit maximization of standardization drivers and pursuing public interests of technical compatibility.[24] At the same time, standards may both support the provision of public goods and diminish welfare through suppression of efficient variation and regulatory competition, depending on the particular type of product and the preferences of individuals and states.[25]

Traditionally, standards are developed by private or semi-public bodies with a formalized structure and consensus-based decision making by their membership. Such SSOs are typically well-established in standardization ecosystem and even widely referred to in applicable legal frameworks: examples include International

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20 Sabino Cassese, *Administrative Law Without the State? The Challenge of Global Regulation*, 37 N.Y.U. J. INT'L L. & POL. 663, 671 (2005) [hereinafter Cassese].

21 *See generally* Panagiotis Delimatsis, *The Future of Transnational Self-Regulation Enforcement and Compliance in Professional Services*, 40 HASTINGS INT'L & COMP. L. REV. 1 (2017); Oliver Hart et al., *The Proper Scope of Government: Theory and an Application to Prisons*, 112 Q. J. ECON. 1127 (1997); Lisa Bernstein, *Opting Out of the Legal System: Extralegal Contractual Relations in the Diamond Industry*, 21 J. LEGAL STUD. 115 (1992).

22 *Cf.* Tim Bertley, *Institutional Emergence in an Era of Globalization: The Rise of Transnational Private Regulation of Labor and Environmental Conditions*, 113 AM. J. SOC. 297, 300 (2007) (discussing forest certification and labor standards).

23 *See* Fabrizio Cafaggi & Agnieszka Janczuk, *Private Regulation and Legal Integration: The European Example*, 12 BUS. & POL. 1, 3 (2010).

24 *Cf.* Joseph A. Cannataci & Jeanne P.M. Bonnici, *Can Self-Regulation Satisfy the Transnational Requisite of Successful Internet Regulation?*, 17 INT'L REV. L. COMPUTERS & TECH. 51, 57–58 (2003).

25 *Cf.* Joel P. Trachtman, *Toward Open Recognition? Standardization and Regional Integration Under Article XXIV of GATT*, 6 J. INT'L ECON. L. 459, 492 (2003).

Organization for Standardization ("ISO"), International Telecommunications Union ("ITU") and European Telecommunications Standards Institute ("ETSI").[26] Standards can also be developed in industry consortia[27]— technical groups comprised of companies sharing a particular interest in a narrow scientific field (e.g. Bluetooth Special Interest Group ("SIG") and World Wide Web Consortium ("W3C")).[28] Having emerged as a response to bureaucratic and stagnant standard-setting,[29] consortia offer faster processes and are preferred standardization platforms in the realm of ICT technologies.[30]

The choice of a standards development platform largely depends on stakeholders' ambition for standardization projects. Companies wishing to rapidly promote their technology typically opt for informal committees,[31] while those pursuing bigger network

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26 Note that while States participate in ISO and IEC through designated bodies, ITU and ETSI generally have a hybrid model that supports contribution from national bodies as well as private corporations (although the governance structure of the two organizations is very different).

27 *See generally* Aija E. Leiponen, *Competing Through Cooperation: The Organization of Standard Setting in Wireless Telecommunications*, 54 MGMT. SCI. 1904 (2008); Justus A. Baron & Tim Pohlmann, *Who Cooperates in Standards Consortia: Rivals or Complementors?*, 9 J. COMPETITION L. & ECON. 905 (2013).

28 Similar to formal SSO, consortia may have different institutional settings: some groups differentiate between promotors (decision-makers) and adopters (implementers). The Internet Engineering Task Force (IETF), for instance, is a loosely self-organized SSO with no formal membership. *See* Biddle et al., *The Expanding Role and Importance of Standards in the Information and Communications Technology Industry*, 52 JURIMETRICS J. 177, 183–90 (2012) (discussing the different types of consortia) [hereinafter Biddle].

29 *See generally* Tim Pohlmann, *The Evolution of ICT Standards Consortia*, 93 COMM. & STRATEGIES 17 (2014) [hereinafter Pohlmann].

30 *See generally* Henry L. Delcamp & Aija Leiponen, *Innovating Standards through Informal Consortia: The Case of Wireless Telecommunications*, 36 INT'L J. INDUSTRIAL ORG. 36 (2014) [hereinafter Delcamp & Leiponen]; Biddle, *supra* note 28 (discussing the increasing role of technical consortia in the field of ICT); Knut Blind & Stephan Gauch, *Trends in ICT Standards in European Standardization Bodies and Standards Consortia*, 32 TELECOMM. POL'Y 503 (2008) (discussing the fact that narrowly focused consortia are more often found in the telecom and e-commerce industry, while manufacturing consortia usually has a broader focus). The rationale behind consortia's popularity may also be explained by the fact that smaller and more homogeneous deliberation groups have faster decision-making, which is an enormous advantage in a highly competitive and innovative environment of technology standardization. *See* Magnus Böstrom & Kristina Tamm Hallström, *Global Multi-Stakeholder Standard Setters: How Fragile Are They?*, 9 J. GLOBAL ETHICS 93, 107 (2013).

31 *See generally* Delcamp & Leiponen, *supra* note 30; Pohlmann, *supra* note 29;

externalities or seeking a formal endorsement carry out their projects in larger organizations.[32] In a similar vein, companies that attach more weight to the quality of a standard than to the pace of its development are likely to join SSOs that follow consensus-based procedures.[33] Loosely organized groups with lower institutional costs may attract less internationally competitive firms aspiring to develop regional standards, whereas formal organizations provide fertile ground for the establishment of global standards.[34] It may also occur that recognized SSOs, despite the alleged weaknesses of their processes, yield better results than informal groups; for instance, the ITU managed to complete standardization of 56K modems, initially carried out in two competing consortia, due to the support from all major market players and the successful resolution of patent issues.[35]

That said, industry consortia are commonly presumed to fall short on the level of procedural and substantive guarantees compared to their formal counterparts.[36] Next to limiting stakeholder participation,[37] standards development in informal groups often lacks consensus and dispute resolution mechanisms.[38] Because informal SSOs can only afford limited due process, standards they create also lack legitimacy.[39]

Biddle, *supra* note 28.

32 *See generally* Josh Lerner & Jean Tirole, *A Model of Forum Shopping*, 96 AM. ECON. REV. 1091 (2006); NILS BRUNSSON & BENGT JACOBSSON, *supra* note 1, at 1; Martin B.H. Weiss & Marvin Sirbu, *Technological Choice in Voluntary Standards Committees: An Empirical Analysis*, 1 ECON. INNOVATION & NEW TECH. 111 (1990).

33 Timothy Simcoe, *Standard Setting Committees: Consensus Governance for Shared Technology Platforms*, 102 AM. ECON. REV. 305, 333–32 (2012) [hereinafter Simcoe].

34 *See generally* Marc T. Austin & Helen V. Milner, *Strategies of European Standardization*, 8 J. EUR. PUB. POL'Y 411 (2001).

35 Shane M. Greenstein & Marc Rysman, *Coordination Costs and Standard Setting: Lessons from 56K Modems* (Ctr. for the Study of Indus. Org., Working Paper No. 0056, 2004), https://www.econstor.eu/bitstream/10419/38700/1/505142961.pdf [https://perma.cc/8SQM-Z5XT].

36 Delcamp & Leiponen, *supra* note 30, at 38–39.

37 Biddle, *supra* note 28, at 184 (explaining this by the separation between different types of members).

38 *Id.*; *see also* Benjamin Chiao et al., *The Rules of Standard-Setting Organizations: An Empirical Analysis*, 38 RAND J. ECON. 905, 927 (2007).

39 *Cf.* Magdalena Bexell, *Global Governance, Legitimacy and (De-) Legitimation*, 11 GLOBALIZATIONS 289, 291 (2014) (discussing the belief that legitimacy rests on open and transparent procedures that follow the generally accepted principles of "right process"

Concerns that informal standards will outpace formal initiatives in many areas and will penetrate the regulatory environment are not uncommon in the EU; the European Commission's proposals in 2011[40] to recognize and reference technical specifications developed by consortia in its public procurement procedures gained quite some critique.[41] In a pessimistic scenario, the promulgation of consortia standards may result in a situation where global regulation is founded on opaque requirements that are tilted toward a single group of actors and where firms cannot compete on a level playing field. More realistic, however, is a situation where the procedural shortcomings of consortia will irreversibly undermine standards' quality by not being submitted for testing and approval by a broad scope of actors— processes that can be implemented by consortia as a means to compensate for the lack of consensus procedures.

B. Normative Relevance of Industry Standards

Although standards developed by transnational SSOs may exert normative pull, distinction between "laws" and "standards" is evident even for a layperson: in the Western world, at least ideally, the law-making process is run by people's representatives, who are entitled to set binding legal norms on behalf of the citizens of a nation-State. Voluntary schemes driven by industry and business actors clearly do not fit this concept: the opposite would undermine the whole idea of parliamentary representation and result in a substantial democracy deficit. Hence, standards are in no way equivalent to legislation; take, for instance, the difference between the notions of "technical regulation" and "standard" supported by the European Union and the World Trade Organization,[42] or the

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and take into account the views of stakeholders).

40 *Proposal for a Regulation of the European Parliament and of the Council on European Standardization and amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/105/EC and 2009/23/EC*, at 2, COM (2011) 315 final (June 1, 2011).

41 Nevertheless, the proposal was indeed implemented into Regulation 1025/2012. *See, e.g.*, *Recognition of Standards Developed by Industry Fora and Consortia for Use in Public Procurement Procedures in the EU – The Importance of Keeping the Process Simple*, EUR. COMM. FOR INTEROPERABLE SYSTEMS, http://www.ecis.eu/wp-content/uploads/2012/03/ECIS_statement_on_the_recognition_of_fora_and_consortia_specifications.pdf [https://perma.cc/NM7R-6UDT].

42 Agreement on Technical Barriers to Trade, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, annex 1A, 1868 U.N.T.S. 120 [hereinafter TBT Agreement]; Regulation 1025/2012 of the European Parliament and of the Council

reference to "*voluntary* consensus standards" used in the US legislation.[43]

Following the strand of legal scholarship, standards are "microcosms of social practices, political preferences, economic calculations, scientific necessity and professional judgment,"[44] or are in a "grey zone of law, morals, economics and politics"[45] and may even exert a practical effect of "hard legal obligations."[46] Indeed, between lengthy discussions, bargaining, and the compromise process, standards development strongly resembles law-making (although this does not imply that standards are equal to laws).[47] For instance, designers of Internet specifications for different levels of network architecture are sometimes compared to law-makers, as they affect the behavior of actors in a way similar to the legislators; the idea that "code is law" is familiar to scholars of Internet governance.[48] Hence, despite the wide acknowledgement of their voluntary nature, standards may still impose practical obligations on business and societal actors.

As such, there are several routes for transnational voluntary standards to metamorphize into mandatory requirements. First and foremost, standards acquire binding force when referenced, cited or incorporated in a State's legislation.[49] In the EU, harmonized

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of Oct. 25, 2012, art. 2, 2012 O.J. (L 316) 12, 12 [hereinafter Regulation 1025/2012].

43 See the terminology used by the Office of Management and Budget (OMB) and the National Technology Transfer and Advancement Act of 1995, which will be discussed *infra* p. 28 and note 146.

44 HARM SCHEPEL, THE CONSTITUTION OF PRIVATE GOVERNANCE: PRODUCT STANDARDS IN THE REGULATION OF INTEGRATING MARKETS 6 (2005) [hereinafter SCHEPEL, CONSTITUTION OF PRIVATE GOVERNANCE].

45 ANNE PETERS ET AL., NON-STATE ACTORS AS STANDARD SETTERS 13 (2009).

46 SCHEPEL, CONSTITUTION OF PRIVATE GOVERNANCE, *supra* note 44, at 12–13.

47 Kingsbury, *supra* note 12, at 15.

48 *See generally* LAWRENCE LESSIG, CODE AND OTHER LAWS OF CYBERSPACE (Basic Books 1990).

49 *See* Tim Büthe, *Engineering Uncontestedness? The Origins and Institutional Development of the International Electrotechnical Commission (IEC)*, 12 BUS. & POL. 1, 3 (2010) [hereinafter Büthe]; *see also* INT'L ORG. FOR STANDARDIZATION & INT'L ELECTROTECHNICAL COMM., ISO/IEC GUIDE 2:2004, STANDARDIZATION AND RELATED ACTIVITIES – GENERAL VOCABULARY art. 3.6 (8th ed., Nov. 2004) [hereinafter ISO/IEC Guide 2] (acknowledging the transformation and describing the term "technical regulation" as "regulation that provides technical requirements, either directly or by referring to or incorporating the content of a standard, technical specification or code of practice).

standards are referenced in the *Official Journal of the European Union* ("OJEU")[50] and are often incorporated into legal contracts, although the use of those harmonized standards is voluntary.[51] The US standardization system, in turn, endorses adoption of private model codes by semi-public organizations and "incorporation by reference" of private standards by federal authorities.[52] Unlike the EU system, the application of referenced standards in the US is not voluntary; rather, the requirement of "voluntary consensus" applies to the standards development process.[53]

Due to the specifics of the US standardization environment, further outlined in the remainder of this paper, many US industry practices rely on rules set by private SSOs. To illustrate: federal building, construction, and mechanical model codes representing a mixture of industry standards, semi-public codes, and public law have been the norm for a long time.[54] Voluntary consensus standards developed by industry-driven bodies thus form a cornerstone of the US industry regulation, despite that federal agencies do not exactly follow a democratic process when implementing private standard, and the control of standards' adoption is entrusted to technical or procurement bodies, and not—as it may be expected in democratic rule-making—to enforcement agencies.[55]

Second, private sector standards may be transformed into binding obligations once they are endorsed *ex post* in a fast or "fast-track" process of an SSO whose standards are widely recognized as

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50 Case C-613/14, James Elliott Constr. Ltd. v. Irish Asphalt Ltd., ECLI:EU:C:2016:821 (2016); BAREND VAN LEEUWEN, EUROPEAN STANDARDIZATION OF SERVICES AND ITS IMPACT ON PRIVATE LAW: PARADOXES OF CONVERGENCE 17 (2017) [hereinafter VAN LEEUWEN] (discussing publication of the reference to harmonized standards as a "coordination of soft law rules at European level").

51 VAN LEEUWEN, *supra* note 50, at 17–18.

52 *See generally* Emily S. Bremer, *Incorporation by Reference in an Open-Government Age*, 36 HARV. J. L. & PUB. POL'Y 131 (2013) [hereinafter Bremer].

53 Petros C. Mavroidis & Robert Wolfe, *Private Standards and the WTO: Reclusive No More*, 16 WORLD TRADE REV. 1, 6 (2017) [hereinafter Mavroidis & Wolfe].

54 SCHEPEL, CONSTITUTION OF PRIVATE GOVERNANCE, *supra* note 44, at 153. For further examples of incorporated standards see, e.g., Jonathan L. Rubin, *Patents, Antitrust and Rivalry in Standard-Setting*, 38 RUTGERS L. J. 509, 509–11 (2007); and RON SCHNEIDERMAN, MODERN STANDARDIZATION: CASE STUDIES AT THE CROSSROADS OF TECHNOLOGY, ECONOMICS AND POLITICS 133–34 (2015), who provides the full list of interoperability standards for mobile application policy recognized by the FDA.

55 SCHEPEL, CONSTITUTION OF PRIVATE GOVERNANCE, *supra* note 44, at 266.

best practices, such as the ISO or IEC. In this case, a technical document is directly submitted for the (final) approval of a working group or even the whole membership, side-stepping the initial stages of standards development.[56] The examples are the Linux standard for operating systems, which was formally adopted by the ISO/IEC; the Portable Document Format ("PDF") developed by Adobe and incorporated into an ISO standard; and specifications drafted by the International Color Consortium that were used as a basis for the IEC 61966-series of "color management" standards.[57]

Lastly, standards may become compulsory when they ensure the functioning of the market in the absence of other regulatory alternatives.[58] The obligatory nature of standards then stems from industry-mediated processes and reflects the requirements of specific markets.[59] And while the market pressure is not sufficient to realize convergence in law,[60] standards that are widely accepted by the industry may still considerably influence firms' capacity to innovate and conduct business overseas.[61] Companies that do not comply with these standards also risk tarnishing their reputation.[62] On a global scale, such standards may serve as indirect trade instruments and are likely to bear similar practical consequences as mandated standards, being prerequisites for market access and reshaping the reality of international commerce.[63]

This type of transformation is particularly witnessed in technical

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56 *See* INT'L ORG. FOR STANDARDIZATION & INT'L ELECTROTECHNICAL COMM., ISO/IEC DIRECTIVES PART 1, CONSOLIDATED ISO SUPPLEMENT – PROCEDURES SPECIFIC TO ISO annex F.2 (10th ed., 2019).

57 For further reading, *see* Büthe, *supra* note 49, at 14–15.

58 SCHEPEL, CONSTITUTION OF PRIVATE GOVERNANCE, *supra* note 44, at 3–6.

59 Büthe, *supra* note 49, at 2.

60 VAN LEEUWEN, *supra* note 50, at 20.

61 According to the European Commission, this especially applies to small and medium-sized enterprises (SMEs), which are not always involved in standards development processes and often lack any operational interest in using a particular standard. *See* Directorate-Gen. for Internal Mkt., Indus., Entrepreneurship and SMEs, Independent Review of the European Standardization System: Final Report, Ref. Ares (2015) 2179280 (May 26, 2015).

62 Equally, companies that *do* comply with certain standards enjoy reputational benefits. Büthe, *supra* note 49, at 3.

63 WORLD TRADE ORG., WORLD TRADE REPORT 2012 (2012); Steven Bernstein & Erin Hannah, *Non-State Global Standard-Setting and the WTO: Legitimacy and the Need for Regulatory Space*, 11 J. INT'L ECON. L. 575, 586 (2008).

interoperability standards,[64] whose market power is cemented in their network effects as well as the willingness of consumers to use certain technology.[65] Interoperability of technological platforms is crucial for achieving a critical mass of actors to expand the size of the market.[66] Take the example of technical specifications for Wireless Local Area Networks ("WLAN"), developed by industry experts in IEEE 802.11 working group[67] and commonly known as Wi-Fi; there is no law that obliges a device manufacturer to implement this standard, yet, selling a smartphone that does not support Wi-Fi connection is doomed to failure. Similar logic applies to Bluetooth and USB specifications and standards for cellular mobile networks, which for a long time have been endorsed by telecommunications companies and the ICT industry. Even a single-actor scheme may gain popularity among the industry,[68] as long as a group of actors sharing interest or preference for a certain standard is established. For instance, prior to its acknowledgement by the ISO, the aforementioned PDF standard developed by Adobe had already become a *de facto* requirement on the relevant market.[69]

In the context of transnational standardization, ICT standards hold a special place. Because these technical specifications codify technological components and prescribe common methods applied in electronic devices,[70] these design and performance standards

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64 In ICT standardization, interoperability refers to technical compatibility of systems and devices to exchange information.

65 Lucio Fuentelsaz et al., *Switching Costs, Network Effects, and Competition in the European Mobile Telecommunications Industry*, 23 INFO. SYS. RES. 93, 93 (2012). *But see* Luis Cabral & David Salant, *Evolving Technologies and Standards Regulation*, 36 INT'L J. INDUS. ORG. 48, 52 (2014) (suggesting that consumers are more concerned with prices rather than with network effects).

66 *See* EVERETT M. ROGERS, DIFFUSION OF INNOVATIONS: MODIFICATIONS OF A MODEL FOR TELECOMMUNICATIONS 245 (1995) (on the example of cellular phone users).

67 *Wireless Local Area Networks*, IEEE 802.11, http://www.ieee802.org/11/ [perma.cc/QS3W-23KA].

68 Kraig A. Jakobsen, *Revisiting Standard-Setting Organizations' Patent Policies*, 3 NW. J. TECH. & INTELL. PROP. 43, 59 (2004).

69 Erik Wijkstrom & Devin McDaniels, *International Standards and the WTO TBT Agreement: Improving Governance for Regulatory Alignment* 17 (World Trade Org. Staff Working Paper ERSD-2013-06, Apr. 25, 2013), https://www.wto.org/english/res_e/reser_e/ersd201306_e.pdf [https://perma.cc/T8Q5-QRHD] [hereinafter Wijkstrom & McDaniels].

70 *See* Raghu Garud & Arun Kumaraswamy, *Changing Competitive Dynamics in Network Industries: An Exploration of Sun Microsystem' Open Systems Strategies*, 14 STRATEGIC MGMT. J. 351, 353 (1993); Mark A. Lemley, *Intellectual Property Rights and*

embody technical solutions to enable interoperability and necessary interference among various elements of technological systems. ICT standards provide compatibility between complex electronic mechanisms, coordinate radio frequencies and encryption software, and support data transmission across the Internet,[71] creating invisible interconnections between hardware pieces, networks, and interfaces. Next to the above-mentioned specifications for short range wireless communication technology and cellular networks, examples of the prominent ICT standards include Transmission Control Protocols ("TCP") for sending data packets over the Internet, and Hypertext Markup Language ("HTML") protocol for designing web pages and web applications.[72]

Against this general background, the next section will shed some light onto the modern landscape of ICT standardization by discussing a number of the recent challenges faced by the industry, SSOs, and civil society actors involved in the development and implementation of interoperability and Internet standards.

III. Trends and Challenges of ICT Standardization

Due to its diversity, standardization involves a great variety of actors who pursue different interests; thus, discussions in SSOs are often prone to disagreements between stakeholders, and, as such, standards give rise to a great variety of issues. In the context of ICT standardization, these challenges often concern intellectual property, but may also relate to standards availability and balance of technical and societal interests. This section highlights a number of topics that have recently come to the forefront of private standardization.

A. Intellectual Property

Matters related to intellectual property are intrinsic to ICT standardization. Due to their technical complexity, ICT standards

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Standard-Setting Organizations, 90 CAL. L. REV. 1889, 1898 (2002).

71 *See generally* Michael L. Tushman & Lori Rosenkopf, *On the Organizational Determinants of Technological Change: Towards a Sociology of Technological Evolution*, 14 RES. IN ORGANIZATIONAL BEHAV. 311 (1992); Tim Weitzel et al., *A Unified Economic Model of Standard Diffusion: The Impact of Standardization Cost, Network Effects, and Network Topology*, 30 MGMT. INFO. SYS. Q. 489, 491–92 (2006); Paul A. David & Shane Greenstein, *The Economics of Compatibility Standards: An Introduction to Recent Research*, 1 ECON. INNOV. NEW TECH. 3, 3–5 (1990).

72 These two standards are the cornerstone of every routine Internet use.

often rely on proprietary solutions to enable their functioning and implementation. Moreover, with the practice of referencing private standards in governmental regulation becoming increasingly common on both sides of the Atlantic, the issue of access to copyrighted standards that effectively impose legal obligations has come to the forefront of recent discussions on standardization.[73] And while the debate on copyright of standards that exert normative power goes beyond the ICT sector, it becomes highly relevant in the context of legitimacy and transparency of SSOs' governance.

Intellectual property concerns related to standards in essence present a challenge to achieve the balance of different, often conflicting, interests—either those of standards' users (access to regulatory documents) and SSOs (exclusive right to reproduce one's intellectual property), or those of product manufacturers (building on standardized technology) and patent holders (monetizing their patents). This balance, however, is crucial for standards' global acceptance, which in turn enables their network effects and improves their functionality.[74] This section thus introduces the widely discussed issues related to intellectual property embedded in standards.

1. Patents Essential for Standards' Functioning

Standards for technical interoperability run on various proprietary technologies, and the number of these technologies increases as standards evolve.[75] Accordingly, in order for their products to interact within the global connectivity networks, device manufacturers have to use patented technologies embedded into such interoperability standards, meaning that they should obtain a license from patent holders against a royalty payment— else, the property rights of the patent holders would be infringed. Access to standards and interoperability is thus conditional upon access to these technologies.

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73 To illustrate, see Am. Soc'y for Testing v. PublicResource.Org, Inc., 896 F.3d 437 (D.C. Cir. 2018).

74 It is the functionality and global acceptance of ICT standards that also ensure their output legitimacy. *See* Raymund Werle & Eric J. Iversen, *Promoting Legitimacy in Technical Standardization*, 2 SCI., TECH. & INNOVATION STUD. 20, 39 (2006).

75 IPLYTICS PLATFORM, WHO IS LEADING THE 5G PATENT RACE? A PATENT LANDSCAPE ANALYSIS ON DECLARED 5G PATENTS AND 5G STANDARDS CONTRIBUTIONS (Nov. 2019), https://www.iplytics.com/wp-content/uploads/2019/01/Who-Leads-the-5G-Patent-Race_2019.pdf [https://perma.cc/2X4T-3525].

SSOs prefer to take a neutral position in the discussions surrounding the licensing of patents essential for the functioning of the standard (known as standard essential patents ("SEPs")): royalties' negotiations between the licensor and licensee typically take place outside standard-setting platforms. Nevertheless, each SSO maintains a Patent Policy requiring its members to commit to disclose and/or license their essential patents.[76] The disclosure obligation requires participants of standard-setting to reveal their existing patents and patents applications that might become essential to the standard in development process.[77] The licensing obligation requires patent holders to license their SEPs either on (fair), reasonable and non-discriminatory terms (F/RAND),[78] or on a royalty-free basis, the latter being a common practice in Internet and software SSOs.[79]

Patent Policies generally aim to strike the balance between the interests of patent holders and patent users. They alleviate the risks of SEP owners abusing their technological supremacy by strategically concealing their essential technology during standard-setting negotiations[80] or by setting excessive licensing fees (a

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76 *See* Jorge L. Contreras, *An Empirical Study of the Effects of Ex Ante Licensing Disclosure Policies on the Development of Voluntary Technical Standards*, NAT'L INST. OF STANDARDS & TECH. (June 27, 2011), https://www.nist.gov/system/files/nistgcr_11_934_empircalstudyofeffectsexantelicensing 2011.pdf [https://perma.cc/7DRK-AC4E] [hereinafter Contreras, *An Empirical Study*] (discussing SSO's Patent Policies). Often, both disclosure and licensing commitments are required.

77 *Id.*

78 While "RAND" is preferred terminology in the US, "FRAND" and "RAND" are often used interchangeably. Under US doctrine, F/RAND terms are akin to a contractual commitment. *See* Jorge L. Contreras, *Patent Pledge Enforcement Theories*, *in* PATENT PLEDGES: GLOBAL PERSPECTIVES ON PATENT LAW'S PRIVATE ORDERING FRONTIER 101 (Jorge L. Contreras & Meredith Jacob eds., 2017) (on FRAND commitments under US law); Timothy S. Simcoe & Allan L. Shampine, *Economics of Patents and Standardization: Network Effects, Hold-up, Hold-out, Stacking*, *in* THE CAMBRIDGE HANDBOOK OF TECHNICAL STANDARDIZATION LAW: COMPETITION, ANTITRUST AND PATENTS 100, 111 (Jorge L. Contreras ed., 2018) (on SSOs' licensing policies as "incomplete contracts"). The meaning of FRAND is not widely agreed through the industry and may be interpreted differently in different jurisdictions.

79 *See* Thimo P. Stoll, *Are You Still in? The Impact of Licensing Requirements on the Composition of Standards Setting Organizations* (Max Planck Inst. for Innovation & Competition Research Paper No. 14-18, Dec. 15, 2014) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2535735 [https://perma.cc/6LVD-VVP3].

80 *See In re* Rambus, Inc., No. 9302, 2006 WL 2330117, *7 (F.T.C. Aug. 2, 2006),

situation referred to as "patent hold-up")[81] while, at the same time, protecting innovators against free-riding on their creations and ideally, ensuring their appropriate reward.[82] The existence of Patent Policies, however, does not always prevent the disputes arising in the context of patent licensing terms.

Most patent-related issues revolve less around specific patents, but rather their application. Unregulated licensing practices may result in abusive behavior by technology-owners and fuel uncertainties among implementers; in turn, low royalty-rates may disincentivize innovative contributions from firms that have heavily invested in their R&D. Antitrust investigations of the past two decades, conducted by the Federal Trade Commission ("FTC") (i.e. *Dell*;[83] *Rambus*[84]) and the European Commission (*Samsung*;[85] *Motorola*;[86] *Qualcomm*[87]) revolved around the abusive or deceptive licensing practices by holders of SEPs. In this regard, the ambiguity of FRAND terms and lack of transparency in SEP disclosure have been explicitly addressed by regulators on both sides of the Atlantic.[88]

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rev'd 522 F.3d 456 (D.C. Cir. 2008) (describing allegations that Rambus deceived members of JEDEC about its efforts to patent and develop technologies, in violation of JEDEC's operating rules and procedures).

81 Luis Cabral & David Salant, *Evolving Technologies and Standards Regulation*, 36 INT'L J. INDUS. ORG. 48, 49 (2014) [hereinafter Cabral & Salant]; Joseph Farrell et al., *Standard Setting, Patents, and Hold-Up*, 74 ANTITRUST L. REV. 603, 608 (2007); Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991, 1992 (2007).

82 Cabral & Salant, *supra* note 81, at 51.

83 *In re* Dell Comput. Corp., 121 F.T.C. 616 (1996).

84 *In re* Rambus, Inc., No. 9302, 2006 WL 2330117 (F.T.C. Aug. 2, 2006), *rev'd*, 522 F.3d 456 (D.C. Cir. 2008).

85 European Commission Press Release IP/12/1448, Antitrust: Commission Sends Statement of Objections to Samsung on Potential Misuse of Mobile Phone Standard-Essential Patents (Dec. 21, 2012).

86 European Commission Press Release IP/13/406, Antitrust: Commission Sends Statement of Objections to Motorola Mobility on Potential Misuse of Mobile Phone Standard-Essential Patents (May 6, 2013).

87 European Commission Press Release MEMO/09/516, Antitrust: Commission Closes Formal Proceedings Against Qualcomm (Nov. 24, 2009).

88 *See* Renata Hesse, Deputy Ass't Att'y Gen., Antitrust Div., U.S. Dep't of Justice, Remarks as Prepared for the ITU-T Patent Roundtable: Six "Small" Proposals for SSOs Before Lunch 6 (Oct. 10, 2012), https://www.justice.gov/atr/file/518951/download [https://perma.cc/4H92-472C] (addressing hold-up); Makan Delrahim, Ass't Att'y Gen., Antitrust Div., U.S. Dep't of Justice, Remarks as Prepared for Delivery at the USC Gould

Concerns around SEP licensing are expected to grow with the deployment of 5G not only due to the increasing number of patents, but also as a result of arising cross-border and cross-sectoral licensing issues. The integrated infrastructure of the IoT, expansion of patents to sectors other than ICT (i.e. agriculture) and increased cooperation among SSOs will contribute to uncertainties around access to standards and should be addressed in the interests of society.[89]

2. *Copyright of Standards that Exert Normative Obligations*

As explained in Section II, referencing private standards or codes in law is not uncommon among regulators. Ideally, when metamorphizing into legal requirements, standards should be accessible to those bound by their mandatory force; the reality, however, is that the majority of private standards is protected by the copyright held by the creators of those standards – the SSOs.[90] Reproduction or distribution of a standards document is thus effectively prevented by their private ownership: this implies that placing private standards referenced in law into public domain (where the law belongs) risks violating SSOs copyright over these standards.

While earlier US case law was inconclusive with regard to the copyright of referenced standards,[91] the Fifth Circuit Court of

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School of Law: Take it to the Limit: Respecting Innovation Incentives in the Application of Antitrust Law 11 (Nov. 10, 2017), https://www.justice.gov/opa/speech/file/1010746/download [https://perma.cc/P2GN-YV66] (on preventing collusive behavior of competitors); *see also Communication from the Commission to the European Parliament, the Council, and the European Economic and Social Committee, Setting out the EU Approach to Standard Essential Patents*, § 2.1, COM (2017) 712 final (Nov. 29, 2017) (suggesting calculations of royalty-rates).

89 *See* AXEL WALZ ET AL., IDPR MUNICH IP DISP. RESOL. F., FRAND ADR CASE MANAGEMENT GUIDELINES 7 (May 2018), http://www.ipdr-forum.org/wp-content/uploads/2018/08/frand-guidelines_helvetica_rz6_klein_online.pdf [https://perma.cc/SB2L-N7V6]; CHRYSSOULA PENTHEROUDAKIS & JUSTUS A. BARON, LICENSING TERMS OF STANDARD ESSENTIAL PATENTS: A COMPREHENSIVE ANALYSIS OF CASES 10 (Nikolaus Thumm ed., 2017).

90 *But cf.* Emily S. Bremer, *On the Costs of Private Standards in Public Law*, 63 KAN. L. REV. 279, 282 (2015) (standards developers voluntarily provided free online access to a surprisingly large share of Pipeline Hazardous Material Safety Administration's standards); Bremer, *supra* note 52.

91 In *BOCA* and *CCC*, the Courts concluded that the copyright of standards is lost once they are referenced in a legal act, see Bldg. Officials & Code Adm. v. Code Tech.,

Appeals confirmed in *Veeck*[92] that once put into public domain, the code in question was transformed into law and hence fell outside the purview of copyright provisions.[93] The practice of copyright of standards incorporated by reference is however still present in the current US standardization system: in the recent case *ASTM v. PRO*,[94] the D.C. Circuit Court of Appeals was cautious with drawing any further conclusions regarding public access to copyrighted standards, merely stating that standards incorporated by reference into law are "at the outer edge of 'copyright's protective purposes.'"[95]

In the EU, the German Federal Constitutional Court (*Bundesverfassungsgericht*) found that in the discussion on copyrighted standards, the public interest in free access prevailed over copyright protection.[96] In turn, the Supreme Court of the Netherlands (*Hoge Raad*) held that when a standard is not published following the procedure specified in applicable Dutch law, it is not legally binding and hence, eligible for copyright claims.[97]

The EU Court of Justice ("CJEU") has not yet been presented with the opportunity to elaborate on the matters related to the copyright of harmonized standards supporting the EU legislation

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Inc., 628 F.2d 730, 735 (1st Cir. 1980); CCC Info. Servs. Inc. v. MacLean Hunter Mkt. Reports, Inc., 44 F.3d 61, 73 (2d Cir. 1994), while in *Practice Management*, the right to claim copyright was granted since the standards were easily available to public. Practice Mgmt. Info. Corp. v. Am. Med. Ass'n, 121 F.3d 516, 520–21 (9th Cir. 1997), *amended by* 133 F.3d 1140 (9th Cir. 1998).

92 Veeck v. S. Bldg. Code Cong. Int'l, Inc., 293 F.3d 791 (5th Cir. 2002) (en banc), *cert. denied*, 539 U.S. 969 (2003).

93 *Id.* at 796.

94 Am. Soc'y for Testing & Materials v. PublicResource.Org, Inc, No. 1:13-cv-01215 (TSC), 2017 WL 473822, (D.D.C. Feb. 2, 2017), *amended by* 896 F.3d 437 (D.C. Cir. 2018).

95 Am. Soc'y for Testing & Materials v. PublicResource.Org, Inc., 896 F.3d 437, 451 (D.C. Cir. 2018). *Id.* at 24. Interestingly, PRO criticized current standardization systems, alleging that by lobbying to have their standards adopted into law and then limiting access to the standards document with copyright, SSOs ignore the right to access the text of the law.

96 BVerfG July 29, 1998, NEUE JURISTISCHE WOCHENSCHRIFT [NJW] ¶ 1 (para. 17), 1998 (Ger.) (discussing that standards issued by the *Deutsches Institut für Normung* (DIN) lose their copyright protection when referenced in a legislative act).

97 HR 22 juni 2012, NJ 2012, 397 (¶ 3.10) m.nt. (Knooble BV/State) (Neth.); *see also* Rob Van Gestel & Hans-W. Micklitz, *European Integration Through Standardization: How Judicial Review is Breaking Down the Club House of Private Standardization Bodies*, 50 COMMON MKT. L. REV. 145 (2013).

and policy. In the past decade, however, the CJEU has demonstrated a consistent trend towards submitting voluntary standards to fundamental principles of EU law, effectively pulling private standards into domain of law.[98] In *Fra.bo*, the Court found that a private body could *de facto* regulate market access "in the light of inter alia the legislative and regulatory context in which it operates."[99] In *James Elliott,* it ruled that, given the publication of a reference in the Official Journal of the EU ("OJEU"), harmonized standards were measures implementing or applying an act of EU law, and hence should be viewed as part of it.[100] Whether and how the CJEU will address private ownership and sale of incorporated standards in the context of constitutionalizing of industry regulation heightens the sense of curiosity in the European standardization system.[101]

While the decisions of US courts lack legal certainty,[102] the deafening silence of the EU institutions on copyright of harmonized standards, together with the balkanized approach across standardization and copyrights laws of the EU Member States, add to the ambiguities about the access to standards documents. Yet, a global approach to standards' copyright is necessary in the light of the growing tendency of globalized, multi-stakeholder standard-setting, where national industries rely on each other's' standards[103]

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98 *See generally* Paul Verbruggen & Barend Van Leeuwen, *The Liability of Notified Bodies Under the EU's New Approach: The Implications of the PIP Breast Implants Case (C-219/15)* 10 (Tilburg Private Law Working Paper Series No. 08/2017), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3038830 [https://perma.cc/DLA5-PPD3].

99 Case C-171/11, Fra.bo SpA v. Deutsche Vereinigung des Gas- und Wasserfaches eV (DVGW) — Technisch-Wissenschaftlicher Verein, ECLI:EU:C:2012:453 (July 12, 2012) ¶ 26.

100 Case C-613/14, James Elliott Constr. Ltd. v. Irish Asphalt Ltd., ECLI:EU:C:2016:821 (Oct. 27, 2016) ¶¶ 32–40.

101 *See also* EUROPEAN COMMITTEE FOR ELECTROTECHNICAL STANDARDIZATION, CEN AND CENELEC POSITION ON THE CONSEQUENCES OF THE JUDGMENT OF THE EUROPEAN COURT OF JUSTICE ON JAMES ELLIOTT CONSTRUCTION LIMITED V. ASPHALT LIMITED (May 2017), https://www.cencenelec.eu/News/Policy_Opinions/PolicyOpinions/PositionPaper_Consequences_Judgment_Elliott%20case.pdf [https://perma.cc/B9ZS-KB2X].

102 Lawrence A. Cunningham, *Private Standards in Public Law: Copyright, Lawmaking and the Case of Accounting*, 104 MICH. L. REV. 291, 296–97 (2005) (discussing that they lack legal clarity because the US Courts are trying to strike a balance between dual policy objectives).

103 *See generally* Graeme B. Dinwoodie, *A New Copyright Order: Why National*

and where efforts are channeled into creating universal standards—with 5G being the most prominent example of cooperation between a broad range of industries, regulators and SSOs. The issue of access in fact lies deeper than the copyright of standards or codes referenced in legal acts: since even those standards that are not incorporated in regulation can exert compliance pull,[104] should they not be freely accessible to stakeholders subjected to the normative obligations imposed by such standards, even if these stakeholders do not pursue technical or commercial interests?

B. Non-Technological Interests in ICT Standardization

The described conflict between property rights and access to standards and technologies essential for their implementation is but one of many cases illustrating how fragile the balance in standard-setting can be. Standardization affects a wide range of interest groups, including governments, commercial actors, and civil society; this specifically applies to ICT standardization, whose direct impact on quotidian life is often eclipsed by multi-dimensional and technologically complex narrative. Concerns voiced by non-technical actors of ICT standardization are not uncommon, especially since the "roll-out" of many IoT standards is rapidly approaching.

The most vivid example is the allegation that participation of China-based companies in standardization of 5G network equipment poses a national security threat to Western governments.[105] This statement, arguably, should not be viewed as a distrust towards Chinese firms, but rather as a distrust in the Chinese regulatory system under which these firms operate.[106]

Courts Should Create Global Norms, 149 U. PA. L. REV. 469 (2000) (discussing that courts should create global norms in terms of copyright laws so that there is a global standard). For instance, many standards of the American Petroleum Institute (API) are used by the European oil and & gas industry.

104 *See* SCHEPEL, CONSTITUTION OF PRIVATE GOVERNANCE, *supra* note 44, at 6.

105 Kiran Stacey & Yuan Yang, *Huawei to Sue US Government Over Equipment Ban*, FIN. TIMES (Mar. 4, 2019), https://www.ft.com/content/c14e07d6-3e8e-11e9-9bee-efab61506f44 [https://perma.cc/MAT6-65ZE]; *America and its Allies Disagree on Huawei*, THE ECONOMIST (Feb. 21, 2019), https://www.economist.com/business/2019/02/21/america-and-its-allies-disagree-on-huawei [https://perma.cc/767Z-AUQZ].

106 Jan-Pieter Kleinhans, *5G vs. National Security: A European Perspective* 2 (Stiftung Neue Verantwortung, Feb. 2019), www.stiftung-nv.de/sites/default/files/5g_vs._national_security.pdf [https://perma.cc/3K7F-GU8M].

Since 5G infrastructure is expected to become critical for the future economy, concerns around its deployment go beyond the somewhat more "traditional" matters of quality and performance of mobile networks and enter the political arena. At the same time, given the limited number of manufacturers of 5G equipment,[107] one may not help but place this debate in the context of growing technology competition between different economies.

Other non-technological concerns arise with regard to alleged increased exposure to radio frequency radiation as a consequence of 5G deployment.[108] Although sporadically addressed by applicable regulatory tools,[109] the potential danger of 5G networks to the environment and public health has not been discussed as such by SSOs involved in 5G standardization.[110] The question thus remains whether the current framework of ICT standardization allows actors other than industry or governmental stakeholders to protect their interests and voice their concerns in technocratic decision-making processes.

Indeed, many SSOs that operate in complex technical domains

The report also notes that due to the lack of technical tools to guarantee trustworthiness of 5G equipment, device manufacturers have the ultimate burden to prove that their products are secure, while acting under regulatory restrictions of the country in which they are established.

107 *Id.* at 4.

108 *See International Appeal: Stop 5G on Earth and in Space*, INT'L APPEAL: STOP 5G ON EARTH & IN SPACE, https://www.5gspaceappeal.org/the-appeal [https://perma.cc/528H-WVFX]; Letter from Sen. Richard Blumenthal and Representative Anna G. Eshoo to Brendan Carr, Comm'r, Fed. Commc'ns Comm. (Dec. 3, 2018), https://www.jrseco.com/wp-content/uploads/2018-1203-Sen-Blumenthal-Rep-Eshoo-to-FCC.pdf [https://perma.cc/9CTC-MR3A]. In this regard, see also *Revision of the HF Guidelines*, INT'L COMM'N ON NON-IONIZING RADIATION PROTECTION (Dec. 7, 2017), https://www.icnirp.org/en/activities/news/news-article/revision-of-hf-guidelines-2017.html [https://perma.cc/T8WA-EJQG]; *The Impact of RF-EMF Exposure Limits Stricter Than the ICNIRP or IEEE Guidelines on 4G and 5G Mobile Network Deployment*, INT'L TELECOMM. UNION (Sept. 20, 2018), https://www.itu.int/rec/T-REC-K.Sup14-201909-I/en [https://perma.cc/QDM9-HUAD].

109 However, it should be noted that the concerns were met skeptically by the European Commission, which delegated the responsibility to the Member States. Nicola Caputo, European Parliamentary Questions E-003975/2018, 5G Radiation and Health Risks (July 17, 2018).

110 *See* Dominique Maria Bonessi, *The Promise of 5G Comes With a Regulatory Headache and Health Risk Concerns*, WAMU (Dec. 6, 2019), https://wamu.org/story/19/12/06/the-promise-of-5g-comes-with-a-regulatory-headache-and-health-risk-concerns/ [https://perma.cc/H8PJ-UCK8]. To the author's knowledge, there were no technical committees formed in SSOs to address this issue.

include societal interests in their mission statements,[111] and some even allow general public to comment on the final draft of their standards, albeit against a fee (i.e. IEEE)[112] or set a very low threshold for joining technical work through their mailing list (i.e. IETF). But even when standards procedures invite contributions from societal actors, the latter may still lack the necessary procedural tools to partake in standard-setting activities of the given organizations. Moreover, decision-making in SSOs' governance bodies often allows only limited participation or, as it is the case in industry consortia, does not include all SSO membership. Yet, such governance rules, including membership requirements, voting quorum and patent policies, effectively underpin the functioning of SSOs and their standard-setting procedures, ensuring that all relevant interests are taken into account.[113]

C. The Need to Address the Imbalance in Standardization

While the abovementioned challenges were discussed in the context of ICT standardization, they can be traced in other types of industry-driven standard-setting[114] and should be viewed in the context of larger dynamics of increased private rule-making. In this regulatory setting, standardization activities that ignore the wide range of interests and are driven by technocratic reasoning are likely to give rise to a number of fundamental concerns, including the legitimacy and validity of standards. These concerns cannot be ignored, especially in the view of the globalized networked society

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111 *See, e.g.*, *Our Values – Vision & Mission*, INT'L ELECTROTECHNICAL COMM'N, http://www.iec.ch/about/values/vision.htm [https://perma.cc/9ZZN-LQ2E] (last visited Jan. 24, 2020); *About IEEE*, INST. OF ELEC. & ELECS. ENG'RS, https://www.ieee.org/about/index.html [https://perma.cc/K3KX-27ZC] (last visited Jan. 24, 2020); *W3C Mission*, WORLD WIDE WEB CONSORTIUM, https://www.w3.org/Consortium/mission#vision [https://perma.cc/N3CE-RW6E] (last visited Jan. 24, 2020).

112 INST. OF ELEC. & ELECS. ENG'RS, IEEE-SA BOARD OPERATIONS MANUAL § 5.4.5 (2019) [hereinafter IEEE-SA, OPERATIONS MANUAL].

113 SSOs policy-making has been recently discussed in the context of balanced representation of SSO membership. JUSTUS A. BARON ET AL., MAKING THE RULES: THE GOVERNANCE OF STANDARD DEVELOPMENT ORGANIZATIONS AND THEIR POLICIES ON INTELLECTUAL PROPERTY RIGHTS 84 (Nikolaus Thumm ed., 2019) [hereinafter BARON ET AL., MAKING THE RULES].

114 For example, standards for good agricultural practices. Khalid Nadvi, *Global Standards, Global Governance and the Organization of Global Value Chains*, 8 J. ECON. GEOGRAPHY 323, 330 (2008).

of the future, where different sectors, technologies and services will be intertwined and the issue of balance of interests will grow even stronger. The problem presented in this part of the paper is as much technical, societal, and political as it is legal, since representation of various interests is ensured through procedural safeguards provided for by the regulatory frameworks in which technical SSOs operate. In view of this, the next section observes how non-technical concerns can be accommodated in SSOs' decision-making under the current legal framework governing industry standardization.

IV. Regulating SSOs via Procedural Legal Frameworks

Despite the fact that most standards are developed in a self-regulatory environment, private-sector standardization has not been completely overlooked in most international and national legal systems. While the complexity of standards' contents is entrusted to technical experts in SSOs' working groups, regulatory frameworks attempt to curb standardization activity by introducing several procedural principles to which SSOs have to adhere to in order to benefit from a certain treatment.[115] Standards developed according to these principles do not unduly restrict international trade or raise antitrust concerns and can be referenced in national laws. Drawing upon the applicable legislation, case law, and scholarship, this section explores how private standardization is regulated under the WTO rules, on which most procedural frameworks for standards development are built and which are implemented by numerous SSOs. It then compares the WTO standardization principles with the corresponding requirements in US and EU law by offering an overview of regulatory tools available for performing procedural scrutiny of SSOs' processes.

A. Standards Under Different Regulatory Frameworks

1. The World Trade Organization (WTO)

The WTO system attaches cardinal importance to regulatory consistency in Members' trade policies. The requirements of eliminating disproportional protectionist regulations, avoiding arbitrary discrimination, and treating "like cases alike" are widely

115 These principles are encapsulated in the frameworks of WTO, US, and EU regulatory frameworks, and will be discussed in section IV.B.

employed in WTO Agreements and case law.[116] While the General Agreement on Tariffs and Trade ("GATT") holds a broad expectation that parties to the Agreement will cooperate for the purpose of harmonizing international rules affecting production, transportation, and marketing,[117] it is the Agreement on Technical Barriers to Trade ("TBT") that contains provisions governing standardization activities.[118] Essentially, the TBT agreement aims to balance Members' right to adopt measures pursuing legitimate objectives of TBT Article 2.2 with the WTO's objective to promote liberalization of international trade.[119] To that end, it provides Members with certain flexibility to develop restrictive policies while acting in accordance with the Agreement,[120] and ensures that such policy space is not abused by Members seeking to protect their own markets.

Next to the general Most-Favored Nation Treatment and National Treatment obligations,[121] the TBT Agreement encapsulates elements of negative integration, requiring Members *not* to design technical regulations that aim to frustrate trade and are more trade-restrictive than necessary for fulfilling legitimate policy objectives,[122] and *not* to maintain restrictions in case the objective of circumstances have changed.[123] The crucial provision of the Agreement is Article 2.4, which calls upon Members to use existing *relevant international* standards (*voluntary*) as a basis for their technical regulations (*mandatory*),[124] meaning that there should be

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116 *Id.*

117 General Agreement on Tariffs and Trade art. XXXVIII(2)(c), Oct. 30, 1947, 61. Stat. A-11, 55 U.N.T.S. 194 [hereinafter GATT].

118 TBT Agreement, *supra* note 42; Appellate Body Report, *European Communities – Measures Affecting Asbestos and Products Containing Asbestos*, ¶ 80, WTO Doc. WT/DS135/AB/R (adopted Mar. 12, 2001) (discussing that obligations imposed by the TBT Agreement are supplementary to those arising from the GATT).

119 Appellate Body Report, *United States – Measures Affecting the Production and Sale of Clove Cigarettes*, ¶ 96, WTO Doc. WT/DS406/AB/R (adopted Apr. 4, 2012).

120 Wijkstrom & McDaniels, *supra* note 69, at 4.

121 TBT Agreement, *supra* note 42, art. 2.1.

122 *Id.* art. 2.2. For the definition of necessity under article 2.2, see Appellate Body Report, *US – Certain Country of Origin Labelling (COOL) Requirements*, ¶¶ 374–79, WTO Doc. WT/DS384/ARB, WT/DS386/ARB (adopted June 29, 2012).

123 TBT Agreement, *supra* note 42, art. 2.3.

124 Except when those are ineffective to achieve the legitimate objective. According to Howse, this requirement should be understood in terms of reasonableness, meaning that there must be a reasonable relationship between the international standard and the

a "very strong and substantial relationship between a regulation and the substance of the international standard."[125] The distinction between a "technical regulation" and a "standard" is explained in Annex 1,[126] which also specifies that an *international* standard within the meaning of the TBT Agreement should be approved by an international body or system offering its membership to all WTO members.[127] Domestic measures based on such relevant international standards enjoy a rebutted presumption of not impeding international trade.[128]

The TBT Agreement does not provide definition of a "relevant international standard." The Appellate Body held in *US–Tuna II* standards are "relevant" when they are crafted in SSOs with "recognized standardization activities"[129] and found that even when not based on consensus (as required in Annex 1.2), *international* standards still fall under the scope of TBT Article 2.4,[130] as long as

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domestic regulation, although the notion of reasonable relationship was rejected by the Appellate Body in Appellate Body Report. *Compare* Robert Howse, *A New Device for Creating International Legal Normativity: The WTO Technical Barriers to Trade Agreement and "International Standards,"* *in* CONSTITUTIONALISM, MULTILEVEL TRADE GOVERNANCE AND INTERNATIONAL ECONOMIC LAW 383, 385–86 (Christian Joerges & Ernst-Ulrich Petersmann eds., 2011) (stating that the requirement should be understood in terms of reasonableness, meaning that there must be a reasonable relationship between the international standard and the domestic regulation), *with* Appellate Body Report, *European Communities – Trade Description of Sardines*, ¶¶ 247–48, WTO Doc. WT/DS231/AB/R (adopted Sept. 26, 2002) [hereinafter EC–Sardines] (rejecting the notion of reasonableness).

125 EC–Sardines, *supra* note 124, ¶ 245 (showing that the burden of proof in this case lies on complainant(s)).

126 TBT Agreement, *supra* note 42, annex 1.1 & 1.2.

127 *Id.*

128 *Id.* art. 2.5 (showing that the wording is also different from art. 2.4).

129 Appellate Body Report, *United States – Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products*, ¶ 376, WTO Doc. WT/DS381/AB/R (adopted June 13, 2012) [hereinafter US–Tuna II]; Annex I of the TBT does not clarify when a body is "recognized." Arguably, recognition is evidenced by acknowledgement of standards in National Standards Organizations (*see* explanation in Section IV.A.3), *id.*, para. 361. *Cf.* Mislav Mataija, *Leveraging Trade Law for Governance Reform: The Impact of the WTO Agreement on Technical Barriers to Trade on Private Standard-Setting*, 2 EUR. REV. PRIV. L. 293, 301 (2019); Panagiotis Delimatsis, *"Relevant International Standards" and "Recognized Standardization Bodies" Under the TBT Agreement*, *in* THE LAW, ECONOMICS AND POLITICS OF INTERNATIONAL STANDARDIZATION 104, 123 (Panagiotis Delimatsis ed., 2015).

130 US–Tuna II, *supra* note 129, ¶ 353. *See also* TBT Agreement, *supra* note 42, annex 1.2; EC–Sardines, *supra* note 124, ¶¶ 219–33 & 255 (showing that the appellate body

the usual procedure of the body that has adopted the standard follows the consensus-requirement.[131] Likewise, the Appellate Body confirmed that whether or not a measure can be classified as a "relevant international standard" to a great extent depends on its drafting process,[132] and referred to the TBT Committee Decision and its six principles[133] as a tool for interpretation and application of the TBT Agreement to international standards.[134]

Next to the Committee Decision, the Code of Good Practice of the TBT Agreement provides procedural framework for standards development[135] which applies to (non)-governmental bodies within the territory of WTO Members.[136] Requirements introduced by the Code of Good Practice to be followed by SSOs somewhat mirror TBT provisions addressing WTO Members.[137]

It is up to WTO Members to ensure that their central standardization bodies accept the Code of Good Practice and

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already extended the scope of the TBT Agreement beyond standards crafted in ISO and IEC, but nevertheless referred to the ISO/IEC Guide 2 for the definition of a standard).

131 Such reasoning of the Appellate Body is unsettling because it opens avenues for those organizations whose standards are not widely used to be considered as relevant standards bodies, aggravating concerns of legitimacy of international standards regimes. *See* Robert Howse, *A New Device for Creating International Legal Normativity: The WTO Technical Barriers to Trade Agreement and "International Standards," in* CONSTITUTIONALISM, MULTILEVEL TRADE GOVERNANCE AND INTERNATIONAL ECONOMIC LAW 383, 389 (Christian Joerges & Ernst-Ulrich Petersmann eds., 2011).

132 This was first stated in EC–Sardines, *supra* note 124.

133 Comm. on Tech. Barriers to Trade, *Second Triennial Review of the Operation and Implementation of the Agreement on Technical Barriers to Trade, Annex 4: Decision on Principles for the Development of International Standards, Guides and Recommendations with Relation to Articles 2, 5 and Annex 3 of the TBT Agreement*, WTO Doc. G/TBT/9 (Nov. 13, 2000) [hereinafter TBT Committee Decision]. The principles implemented in other legislation, e.g. Regulation 1025/2012, *supra* note 42, rec. 2, will be analyzed in the following sections.

134 As pursuant to the Vienna Convention on the Law of Treaties art. 31(3)(a), May 23, 1969, 1155 U.N.T.S. 331. For further commentary on the decision, see Panagiotis Delimatsis, *Global Standard-Setting 2.0: How the WTO Spotlights ISO and Impacts the Transnational Standard-Setting Process*, 28 DUKE J. COMP. & INT'L L. 273, 284 (2018) [hereinafter Delimatsis, *Global Standard-Setting*].

135 TBT Agreement, *supra* note 42, annex 3.

136 *Id.* In contrast to the TBT Committee Decision that applies to international standards bodies.

137 TBT Agreement, *supra* note 42, annex 3(D), (E) & (F) (referring to such principles as MFN and national treatment, as well as requiring that standards do not result in barriers for international trade and are based on international standards).

comply with its provisions,[138] even when SSOs have not accepted the Code—which is a prerequisite for SSOs to act in conformity with TBT.[139] With regard to regional, local, and non-governmental standardizing bodies within their territories, Members are required to take *reasonable measures* to ensure acceptance and compliance of these bodies with the provisions of the Code of Good Practice.[140] Yet, it remains unclear what "reasonable measures" should be taken by Members to ensure that their local and non-governmental bodies fulfill the requirements of Article 4.1 and Annex 3 of the TBT Agreement,[141] and what consequences will be faced by Members who do not comply with this obligation.[142]

2. *The United States (US)*

The standardization framework of the US is largely based on decentralization and public-private partnership, where standards development activities are delegated to industry-driven bodies. Circular A-119, enacted by the Office of Management and Budget ("OMB") in 1982,[143] ("OMB Circular"), encouraged the private sector to develop voluntary standards, and instructed federal governments to incorporate the reference to private standards into

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138 *Id.* art. 4.1 & annex 3(B).

139 *Id.* art. 4.2.

140 *Id.* art. 4.1 & annex 3(B).

141 *See* Vera Thorstensen et al., *Private Standards – Implications for Trade, Development and Governance*, E15 INITIATIVE (Sept. 2015), https://e15initiative.org/publications/private-standards-implications-for-trade-development-and-governance/ [https://perma.cc/XF72-5BFV]. Some commentators have argued that taking "reasonable measures to ensure compliance" is an empty obligation, or at least an obligation of a process. *See* Eva van der Zee, *Disciplining Private Standards Under the SPS and TBT Agreement: A Plea for Market-State Procedural Guidelines*, 52 J. WORLD TRADE 393 (2018).

142 *Cf.* Enrico Partiti, *What Use Is an Unloaded Gun? The Substantive Discipline of the WTO TBT Code of Good Practice and its Application to Private Standards Pursuing Public Objectives*, 20 J. INT'L ECON. L. 829, 834 (2017); Comm. on Tech. Barriers to Trade, *Notification Under Paragraph C of the WTO TBT Code of Good Practice*, WTO Doc. G/TBT/CS/N/199 (Feb. 20, 2019) (showing that until December 2018, no Member has notified the acceptance of the Code of Good Practice by a non-governmental body within its territory: the first private body accepting the Code is the U.S.-based Calendaring and Scheduling Consortium "CalConnect").

143 OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, OMB CIRCULAR NO. A-119, FEDERAL PARTICIPATION IN THE DEVELOPMENT AND USE OF VOLUNTARY CONSENSUS STANDARDS AND IN CONFORMITY ASSESSMENT ACTIVITIES (1982).

legislative documents.[144] Since the original OMB Circular provided little guidance as to how the standards should be implemented,[145] it was practically ignored until 1995, when the National Institute of Standards and Technology ("NIST") of the Department of Commerce gained control over standardization and conformity assessment policy and mandated agencies to use voluntary consensus standards developed by private organizations *in lieu* of governmental standards to achieve their policy objectives.[146]

While implementing the provisions of the National Technology Transfer and Advancement Act of 1995 ("NTTAA") and the related executive orders of the US Government,[147] the updated OMB Circular clarified the role of federal agencies in US standardization activities, addressing the issue of national implementation of private voluntary schemes.[148] Additional guidance was offered by the revision in 2016 and addressed, among other things, agencies' participation in private standards development activities as well as factors that should be considered by agencies when referencing a standard in regulation,[149] such as effectiveness and suitability of that standard for agency's needs, the extent to which it falls under the definition of voluntary consensus standard and whether it is "reasonably available."[150] This last factor generated a wide-ranging discussion during the revision of the OMB Circular, which prompted a number of questions concerning standards' accessibility in a non-regulatory context, availability for "the class of persons

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144 *Id.*

145 SCHEPEL, CONSTITUTION OF PRIVATE GOVERNANCE, *supra* note 44, at 87–88, n.49.

146 National Technology Transfer and Advancement Act of 1995, Pub. L. No. 104-113, §§ 2(1), 11, 110 Stat. 775, 775–80 (1996).

147 Proposed Revision to Circular No. A119, "Federal Participation in the Development and Use of Voluntary Standards; Invitation for Public Comment," 47 Fed. Reg. 16,919 (proposed Apr. 13, 1982) (Apr. 20, 1982).

148 OMB Circular A-119; Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities, 63 Fed. Reg. 8546, 8549 (Feb. 19, 1998).

149 OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, FINAL REVISION OF OMB CIRCULAR A-119 (Jan. 2016), https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A119/revised_circular_a-119_as_of_1_22.pdf [https://perma.cc/T8ME-6JE3] [hereinafter REVISED OMB CIRCULAR A-119]; Revision of OMB Circular No. A-119, "Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities," 81 Fed. Reg. 4673 (Jan. 27, 2016).

150 *Id.* at 4673.

affected" and the necessity of a "freely available, non-technical summary."[151]

As such, the definition of "reasonable availability" falls outside the purview of the OMB Circular and is a matter of the Office of the Federal Register ("OFR").[152] Nevertheless, the OMB clarified certain factors that can assist agencies (but should not necessarily be followed by agencies) in determining whether a standard is indeed reasonably available to interested parties. These factors include accessibility of a read-only version of a standard during the comment period; costs associated with the access to a standard and incorporated materials; the degree to which such access is required to achieve agency's policy goals; and availability of a summary explaining the content of a standard to those lacking relevant technical expertise.[153] Remarkably, the issue of standards' copyright did not play a significant role in deliberations on standards' availability.

Industry-driven SSOs may be subjected to accreditation by the American National Standards Institute ("ANSI"), the "administrator and coordinator" of the US standardization system[154] empowered to develop rules for other US-based SSOs.[155] Unlike the NTTAA and OMB Circular, which address the US agencies that reference private consensus standards, ANSI's Essential Requirements target standard development processes and constitute "the minimum acceptable due process requirements for the development of consensus."[156] Only those SSOs whose procedures are in line with this set of principles may be accredited as American Standards

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151 Freedom of Information Act (FOIA), 5 U.S.C. § 552(a)(1) (1996) (this is a "reasonably available" requirement of the Freedom of Information Act), as amended by Pub. L. No. 104-231, 110 Stat. 3048 (1996).

152 *Id.* (the statutory obligation of OFR on reasonable availability is balanced with US copyright law, US international trade obligations, and agencies' ability to substantively regulate under their authorizing statutes). *See* Incorporation by Reference, 79 Fed. Reg. 66,267 (Nov. 7, 2014).

153 REVISED OMB CIRCULAR A-119, *supra* note 149, at 20–21, ¶ 5(f).

154 Emily S. Bremer, *American and European Perspectives on Private Standards in Public Law*, 91 TUL. L. REV 325, 341 (2016) [hereinafter Bremer, *American and European Perspectives*].

155 AM. NAT'L STANDARDS INST., ANSI ESSENTIAL REQUIREMENTS: DUE PROCESS REQUIREMENTS FOR AMERICAN NATIONAL STANDARDS (Jan. 2020) [hereinafter ANSI ESSENTIAL REQUIREMENTS] (note that ANSI neither develops standards itself nor mandates them).

156 *Id.* §§ 1.0, 2.0.

Developers ("ASDs").[157] Furthermore, ANSI applies a similar set of requirements to the accredited standards developed in private SSOs as American National Standards ("ANSs").[158] While the US legal framework does not require either accreditations for standards to be used for regulatory and policy purposes, the ASD and ANS designation grant a sort of presumption of compliance with the OMB Circular and confer legitimacy to particular standards and recognition to SSOs.[159]

The US federal agencies have often acknowledged potential antitrust risks stemming from coordinated standards development.[160] Collaborations in SSOs may give rise to collusive behavior when companies involved in technical committees attempt to tilt standards development processes in their favor by excluding competitors,[161] breaching Section 1 of the Sherman Act.[162] While research and development activities have traditionally benefited from the "rule of reason" treatment under National Cooperative Research and Production Act of 1993 ("NCRPA"),[163] the Standards

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157 AM. NAT'L STANDARDS INST., *Constitution and By-Laws*, https://share.ansi.org/shared%20documents/About%20ANSI/Governance/ANSI_Constitution_and_ByLaws_2015.pdf [https://perma.cc/N73Q-QX7H] (2015) (as of January 2018, ANSI accredited 237 SSOs, which together have produced more than 11,500 American National Standards); *see* AM. NAT'L STANDARDS INST., *Introduction to ANSI*, https://www.ansi.org/about_ansi/introduction/introduction?menuid=1 [https://perma.cc/3PT7-3ZRC].

158 AM. NAT'L STANDARDS INST., *Introduction to ANSI*, https://www.ansi.org/about_ansi/introduction/introduction?menuid=1 [https://perma.cc/3PT7-3ZRC].

159 *Cf.* Bremer, *American and European Perspectives*, *supra* note 154, at 147–48.

160 *See* Renata Hesse, Deputy Ass't Att'y Gen., Antitrust Div., U.S. Dep't of Justice, Remarks at the Chatham House Conference on Globalization of Competition Policy: Can There Be a "One-World Approach" to Competition Law? (June 23, 2016), https://www.justice.gov/opa/speech/principal-deputy-assistant-attorney-general-renata-b-hesse-delivers-remarks-chatham-house [https://perma.cc/PHN5-KGH7] (regarding the near unanimity around the world about the importance of discovering and prosecuting cartels).

161 *Cf.* BJÖRN LUNDQVIST, STANDARDIZATION UNDER EU COMPETITION RULES AND US ANTITRUST LAWS: THE RISE AND LIMITS OF SELF-REGULATION (2014) [hereinafter LUNDQVIST].

162 Sherman Antitrust Act, 15 U.S.C. § 1 (1890).

163 The NCRPA was adopted in 1993 and amended the National Cooperative Research Act of 1984 ("NCRA"), which addressed joint research cooperation. Lundqvist suggested the NCRPA disincentivizes private plaintiffs and antitrust enforcement agencies to bring to the court companies operating in R&D. *See* LUNDQVIST, *supra* note 161, at 181.

Development Organizations Advancement Act of 2004 ("SDOAA")[164] extended the protection of US antitrust laws to SSOs by expanding the scope of the rule of reason to private standards development organizations.[165]

In part, SDOAA 2004 may be viewed as an (admittedly, overdue) reaction to the Supreme Court's ruling in *ASME v. Hydrolevel*,[166] which stipulated that an SSO can be held liable for its agents' misuse of standard-setting processes with an anti-competitive objective, even if the SSO in question have never ratified, authorized, or derived any benefit from this activity, as long as the agents have acted under the "apparent authority" of the organization.[167] SDOAA 2004 further implements the requirements of the OMB Circular and, similar to ANSI, introduces a set of procedural principles SSOs have to comply with to fall within the scope of this Act and hence, to benefit from the rule of reason treatment.[168]

In the course of time, several SSOs' were subjected to scrutiny against antitrust provisions, and in particular Section 1 of the Sherman Antitrust Act. In *Allied Tube*,[169] the Supreme Court stated that private standard-setting programs should be based on the merits of objective expert judgment and follow procedures that prevent standard-setting processes from being biased by members with economic interests in stifling competition.[170] On different occasions, the conduct of an SSO was found not to violate Section 1 of the Sherman Antitrust Act, for instance when certain technology was not selected to be included into the standard due to the supposed "monopsony" or "conspiracy" by the SSO's

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164 The SDOAA amended the text of the NCRPA 1993.

165 Standards Development Organization Advancement Act of 2004, Pub. L. No. 108-237, § 102(8), 188 Stat. 661, 662 (2004) (in practice, however, SSOs were using the NCPRA even before the amendment since the definition of "research" was very wide and could cover activities of SSOs); LUNDQVIST, *supra* note 161, at 151.

166 Am. Soc'y of Mech. Eng'rs v. Hydrolevel Corp., 456 U.S. 556 (1982).

167 *Id.* at 557–58.

168 Standards Development Organization Advancement Act, Pub. L. No. 108-237, § 102(5), 118 Stat. 661, 662 (2004).

169 Allied Tube v. Indian Head, Inc., 486 U.S. 492 (1988).

170 *Id.* at 509 (interestingly, the Court also held that "statutory adoption of private standard does not determine whether that private entity's conduct is immune from the antitrust laws").

members.[171]

3. *The European Union (EU)*

Unlike the US, the EU maintains a centralized standardization system. From the outset, technical standards were specified in a patchwork of Directives, whose complexity and ineffectiveness, together with political challenges to achieve consensus among Member States, impeded technical harmonization.[172] Meanwhile, the European markets remained balkanized by national standards and regulations, which posed major obstacles for intercommunity trade and precluded the completion of Internal Market.[173] With the introduction of the "New Approach" in 1985,[174] the EU standardization regime became co-regulation between European and national regulatory institutions and private technical bodies,[175] where private standards developed by the three European Standardization Organizations ("ESOs") (CEN, CENELEC and ETSI)[176] are used to support EU legislation and policy goals.[177]

Standards development, administration, and other related activities of the ESOs (and, occasionally, NSOs) are co-financed by

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171 *E.g.*, Adamaxx Core v. Open Software Found., 152 F.3d 48 (1st Cir. 1998); Golden Bridge Tech. v. Motorola Inc., 547 F.3d 266 (5th Cir. 2008).

172 SCHEPEL, CONSTITUTION OF PRIVATE GOVERNANCE, *supra* note 44, at 63; Jacques Pelkmans, *New Approach to Technical Harmonization and Standardization*, 25 J. COMMON MKT. STUD. 249, 251 (1987).

173 Harm Schepel, *The New Approach to the New Approach: The Juridification of Harmonized Standards in EU Law*, 20 MAASTRICHT J. EUR. & COMP. L. 521, 522–23 (2013) [hereinafter Schepel, *New Approach*].

174 Council Resolution of 7 May 1985 on a New Approach to Technical Harmonization and Standards, 1985 O.J. (C 136) 1.

175 *See also* Megi Medzmariashvili, *Delegation of Rulemaking Power to European Standards Organizations: Reconsidered*, 44 LEGAL ISSUES ECON. INTEGRATION 353, 355 (2017).

176 Member States can participate in ESOs through their National Standards Organizations (NSOs). Companies can also join ETSI membership.

177 European Directives merely cover general requirements, such as health, safety and protection of consumers or environment. For the list of New Approach Directives and Regulations, see EUR. COMM. FOR ELECTROTECHNICAL STANDARDIZATION (CENELEC), *New Approach Directives*, https://www.cenelec.eu/aboutcenelec/whatwestandfor/supportlegislation/newapproachdirectives.html [https://perma.cc/XP23-HA3R]. For the list of harmonized standards, see EUR. COMM., *Harmonised Standards*, https://ec.europa.eu/growth/single-market/european-standards/harmonised-standards_en [https://perma.cc/B2VQ-UH83].

the EU.[178] Funding becomes especially relevant when it comes to the issue of accessibility and availability of standards. From the three ESOs, only ETSI puts its standards in public domain, presumably since its members are prepared to pay higher membership dues to compensate for the "loss of income" from standards' selling.[179] This financial model would not work for CEN and CENELEC, where different standardization activities are run by different types of members.[180]

Where US federal agencies are merely encouraged to take part in private standards development, the European Commission is empowered to request development of European harmonized standards ("ENs") and to determine content requirements of these documents.[181] For manufacturers, compliance with such mandated standards grants products a "free movement pass" and allows their unrestricted circulation in all Member States.[182] References to ENs are published in the OJEU.[183] Except where objections to harmonized standards can be raised under a different EU act, the Regulation allows Member States and the European Parliament to

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178 Regulation 1025/2012, *supra* note 42, arts. 15–16.

179 This assumption has been communicated to the author by a number of ESOs staff members.

180 Unlike ETSI, CEN/CENELEC do not grant membership to private companies. Hence, ETSI's members are predominantly commercial firms, while CEN/CENELEC members are mostly NSOs. See EUR. TELECOMM. STANDARDS INST. (ETSI), *Current Members*, https://www.etsi.org/membership/16-membership/23-current-members [https://perma.cc/472H-7LPK] for current ETSI members. See EUR. COMM. FOR STANDARDIZATION (CEN), *CEN Members*, https://standards.cen.eu/dyn/www/f?p=CENWEB:5 [https://perma.cc/D9TB-TLPC], for current CEN members. For a list of current CENELEC members, see EUR. COMM. FOR ELECTROTECHNICAL STANDARDIZATION (CENELEC), *List of CENELEC National Committees*, https://www.cenelec.eu/aboutcenelec/whoweare/ceneleccommunity/members/index.html [https://perma.cc/KFY3-KSU3] (last visited Feb. 16, 2020).

181 Regulation 1025/2012, *supra* note 42, art. 10 (note that apart from ENs, the ESOs also develop other standardization deliverables, such as guides and reports).

182 *Cf.* Council Resolution of 7 May 1985 on a New Approach to Technical Harmonization and Standards, 1985 O.J. (C 136) 1, annex II. See *List of New Approach Directives*, CE-TEST, https://www.cetest.nl/european-new-approach-directives.htm [https://perma.cc/A9W5-XVUE], where specific standards are referenced in the New Approach Directives and Regulations. Indeed, compliance with harmonized standards is just one way to demonstrate compliance with the requirements of the Directives.

183 Regulation 1025/2012, *supra* note 42, art. 10(6). Note that under the old approach, publication was merely informative.

initiate a formal objections procedure, under which the Commission may decide, upon consultations with experts, whether to publish or maintain a harmonized standard.[184]

Similar to the US, the EU legislation addresses antitrust concerns related to the work of SSOs, which may potentially breach Article 101(1) of the Treaty of Functioning of the European Union ("TFEU"). Economic advantages of standardization agreements are recognized under the guidelines for horizontal cooperation agreements ("the Guidelines"), adopted in 2001 and updated in 2011.[185] The Guidelines provide that standardization agreements that do not restrict competition by object by having the risk of creating market power, would *normally* fall outside the scope of Article 101(1), as long as they comply with the cumulative conditions of the "*safe harbor*:" unrestricted participation in standard-setting, transparent procedure, no obligation to comply with a standard and FRAND-based IPR policies.[186] The failure to fulfill these conditions does not directly lead a presumption of anticompetitive conduct:[187] an effect-based assessment is required to establish whether the agreement at issue falls under Article 101(1) of the TFEU, and whether it can be "saved" by Article 101(3).[188]

The principles of the *safe harbor* were tested by the CJEU in

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184 *Id.* art. 11. Recently, Germany raised a formal objection against EN ISO 19085-3:2017 proposing safety requirements for woodworking machines, who stated that publication of the standard in the OJEU should be accompanied by a declaration that compliance with the standard at issue does not result in a presumption of conformity with the essential health and safety requirements of the EU Machinery Directive (2006/42/EC). *See* Directorate-Gen. for Internal Mkt., Indus., Entrepreneurship and SMEs, Formal Objection Against EN ISO 19085-3:2017 Woodworking Machines – Safety Requirements – Part 3: Numerically Controlled Boring and Routing Machines Under Article 12 of Regulation (EU) No. 1025/2012, 2012 O.J. (L 316) 12 (Jan. 16, 2018), https://ec.europa.eu/docsroom/documents/27324 [https://perma.cc/7XB6-ZSGN].

185 European Commission, Guidelines on the Applicability of Article 101 of the Treaty on the Functioning of the European Union to Horizontal Co-operation Agreements, 2011 O.J. (C 11) 1 [hereinafter Horizontal Guidelines].

186 *Id.* ¶ 280.

187 *Id.* ¶ 279.

188 *Id.* ¶ 273; *see also* Damien Geradin, *The European Commission Policy the Licensing of Standard-Essential Patents: Where Do We Stand?*, 9 J. COMPETITION & ECON. 1125, 1126 (2013). As it may be reasonably expected, the Guidelines prohibit so-called "fraud" standardization agreements - the use standards development in a discriminatory manner or as a tool for exclusion of actual or potential competitors. *See* LUNDQVIST, *supra* note 161, at 199.

EMC Development,[189] where the Court accepted the possibility to scrutinize CEN's processes against the procedural requirements of the EU Horizontal Guidelines, intentionally bypassing the analyses on alleged cartelization.[190] Accordingly, it is only the process of drafting a standardization agreement, not its effects, which were subject to scrutiny under competition law.[191] This case illustrates that standards crafted within ESOs could be potentially examined under Article 101(1), despite that the earlier case law found CEN to be entrusted with general economic interest,[192] and thus immune from competition claims.

B. Governance Principles and Procedural Safeguards in Industry Standardization

Each regulatory framework discussed in the previous section formulates a set of principles to which private SSOs should adhere. These principles revolve around the quality of SSOs *processes* (i.e. transparent process and open membership) as well as the quality of their *outcome* (i.e. standards that are relevant for the needs of the market). To bring some clarity to their application, this section reviews procedural safeguards introduced by the regulatory frameworks of the WTO, US, and EU, and makes some preliminary observations about the relevance of these safeguards for private standardization.

1. Decoding Procedural Principles for Standards Development

This sub-section provides a holistic overview of procedural principles that are derived from the regulatory frameworks of the WTO, US, and EU, and explains how these principles are interpreted in each of the frameworks. It furthermore discusses how these principles were applied in practice by introducing some recent examples or considerations when SSOs' compliance with these principles was at stake.

a. Transparency

Perhaps one of the most common principles encountered in

189 Case C-367/10 P, EMC Dev. AB v. Comm'n, 2011 E.C.R. I-00046.

190 *Id.* ¶¶ 94–104.

191 *Id.* ¶¶ 114–21.

192 Case T-4/92, Evangelos Vardakas v. Comm'n, 1993 E.C.R. II-359, ¶ 47.

applicable regulatory frameworks is the principle of transparency. In a transnational setting, transparency is used as a tool to provide stakeholders with a grip on accountability and is essential for the functioning of a multi-stakeholder organization.[193] As one of the main facets of administrative law, transparency is realized by providing timely access to the relevant information,[194] such as decisions of an organization and its committees and resources that underpin them.[195]

In the multilateral trading system, transparency facilitates harmonization and coherence of technical requirements across the WTO Members. The general provision on transparency in standardization activities, namely Article 2.9 TBT Agreement,[196] is implemented by the TBT Committee Decision, which in turn specifies steps to be taken by SSOs to achieve greater transparency, such as publishing of work programs,[197] notifying standardization activities, allowing access to the relevant information *at least* to the interested parties and providing opportunities to comment on standards' drafts.[198] The Code of Good Practice clarifies that a copy of a draft standard should be provided in a non-discriminatory manner to any interested party requesting it,[199] and that an "adequate period of time" for submitting comments amounts to at least 60 days.[200] When publishing their working programs or (draft) standards, SSOs should also consider technical means available in different countries.[201]

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193 *See* Magnus Böstrom & Kristina Tamm Hallström, *Global Multi-Stakeholder Standard Setters: How Fragile Are They?*, 9 J. GLOBAL ETHICS 93, 100 (2013).

194 Monica Blagescu & Robert Lloyd, *Accountability of Transnational Actors: Is There Scope for Cross-Sector Principles?*, *in* NON-STATE ACTORS AS STANDARD SETTERS 270, 278 (Anne Peters et al. eds., 2009).

195 *Id.*; Elizabeth Fisher, *Transparency and Administrative Law: A Critical Evolution*, 63 CURRENT LEGAL PROBS. 1, 272 (2010).

196 TBT Agreement, *supra* note 42, art. 2.9.

197 Comm. on Tech. Barriers to Trade, *Second Triennial Review of the Operation and Implementation of the Agreement on Technical Barriers to Trade Under Article 15.4*, ¶ 4, WTO Doc. G/TBT/37 (Nov. 6, 2015).

198 TBT Committee Decision, *supra* note 133, annex 4, ¶ B(4).

199 TBT Agreement, *supra* note 42, annex 3(M), (P).

200 *Id.* annex 3(L).

201 TBT Committee Decision, *supra* note 133, annex 4, ¶ B(3). The TBT Committee has taken a number of steps in recent years to facilitate implementation of the principle of transparency, such as improving notifications and functioning of enquiry points and exchanging regional experiences. Comm. on Tech. Barriers to Trade, *Eighth Triennial*

In the US regulatory framework, transparency applies both to federal agencies, which should announce their participation in standardization activities related to the issues of national priority or (international) regulation,[202] and to SSOs, which should notify their work on current and new standards and make written procedures available to all stakeholders.[203] In a similar vein, there are requirements to notify all parties affected by the particular standardization activity and to allow access to information, laid down in the SDOAA 2004.[204] Other elements of transparency are encapsulated in the ANSI's principle of "openness" and include providing information on parties' affiliation and notifying stakeholders of particular development activities.[205]

In EU law, the Horizontal Guidelines mention that standardization platforms should implement procedures informing stakeholders in "good time" of on-going, finalized, and future standardization work at each stage of standards development.[206] Similar to the TBT framework, where the role of "notifications hub" is entrusted to the ISO and the WTO TBT facility, Regulation 1025/2012 provides that notifications of NSOs and informal SSOs, whose standards may be used by the Commission for procurement purposes, should be submitted to the ESOs.[207] Yet, where Regulation 1025/2012 obliges SSOs to make their work programs publicly available,[208] the TBT Committee Decision does not speak in terms of "public availability," but rather, the "easy accessibility" of information regarding SSOs' current work programs.

In practice, however, transparency is not always present in SSOs. Industry consortia especially appear to lack transparency, since most prefer to remain a closed group of technical experts and to not publish information relevant to their ongoing and future

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Review of the Operation and Implementation of the Agreement on Technical Barriers to Trade Under Article 15.4, ¶¶ 6.1.1, 6.6.2 & 7, WTO Doc. G/TBT/41 (Nov. 19, 2018).

202 REVISED OMB CIRCULAR A-119, *supra* note 149, ¶ 6(e).

203 ANSI ESSENTIAL REQUIREMENTS, *supra* note 155, §§ 1.5, 1.9 & 2.5 (referring directly to notification requirements and not to the notion of transparency).

204 Standards Development Organization Advancement Act of 2004 (2004), Pub. L. No. 108-237, § 102, 188 Stat. 661 (2004).

205 ANSI ESSENTIAL REQUIREMENTS, *supra* note 155, § 2.1.

206 Horizontal Guidelines, *supra* note 185, at 60.

207 Regulation 1025/2012, *supra* note 42, art. 12.

208 *Id.* art 3.3.

standards development. For instance, SSOs such as VXI bus and the Open Geospatial Consortium, while providing information on their recent products or sometimes even putting their standards into public domain, do not publish their work program,[209] which is required under the notion of transparency in the WTO. This fact has also been indicated as preventing effective communication and—sometimes necessary—information exchange among standardization platforms.[210]

b. Openness and Participation

Related to transparency is the principle of participation or openness. Participation is believed to facilitate effective policy shaping by providing possibilities to consult stakeholders at the early stage of rule-making and to exchange past experiences.[211] To that end, participation should be meaningful and effective; it should allow actors to *change* the outcome by approval or acceptance processes.[212] In SSOs, broad stakeholder engagement results in wide-ranging technical discussion and contributes to standards' adoption by industry.[213] Yet, in a narrow-specialized technical field, increased participation may dissipate the effectiveness of technical processes and cause breakdowns in experts' negotiations,[214] or unnecessarily prolong technical deliberations, which in turn

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209 *Cf. Standard Program*, OPEN GEOSPATIAL CONSORTIUM, https://www.opengeospatial.org/ogc/programs/spec [https://perma.cc/X3WA-VE4E].

210 According to a conversation between the author and an industry expert. While this procedural shortcoming may allegedly be compensated by standards endorsements in fast-track processes of formal SSOs, it does not take away the fact that stakeholders may have been deprived of opportunities to participate at the earlier stage of standards development.

211 Carol Harlow, *Global Administrative Law: The Quest for Principles and Values*, 17 EUR. J. INT'L L. 187, 202 (2006).

212 *Cf.* Kate O'Neill et al., *Actors, Norms, and Impact: Recent International Cooperation Theory and the Influence of the Agent-Structure Debate*, 7 ANN. REV. POL. SCI. 149, 168 (2004); Andrew Moravczik, *Is There a "Democratic Deficit" in World Politics? A Framework for Analysis*, 39 GOV'T & OPPOSITION 336, 342 (2004) (discussing the openness in policy decision-making).

213 *Cf.* Tim Büthe, *Engineering Uncontestedness: The Origins and Institutional Development of the International Electrotechnical Commission (IEC)*, 12 BUS. & POL. 1, 11 (2010) (discussing the increased legitimacy due to participation of global actors).

214 *Cf.* David Stasavage, *Open-Door or Closed-Door? Transparency in Domestic and International Bargaining*, 58 INT'L ORG. 667, 668 (2004) (discussing the transparency in international policy-making).

threatens the effectiveness of a standard.[215]

The TBT Committee Decision provides that open and unrestricted participation should be guaranteed at all levels of standard-setting, including proposals of new work items, technical discussions, and voting.[216] However, pursuant to the wording of the Decision, requirement to ensure that participation is also *meaningful* applies only to standards development.

In the earlier version of the OMB Circular, the principle of openness was explained as "providing meaningful opportunities to participate *at all stages* of standards development."[217] During the revision of the OMB Circular, however, many commenters voiced concerns that the providing participation "at all stages" may burden the work of SSOs while, as a practical matter, this requirement was already implemented by the principle of transparency.[218] Accordingly, the sentence was replaced by "providing meaningful opportunities to participate *on a non-discriminatory basis*."[219] In turn, SDOAA 2004 stipulates that all procedural principles, including openness, should be applied also to all SSOs' standardization activities and "actions relating to the IPR policies."[220]

In the EU, the Horizontal Guidelines require SSOs to implement the principle of participation via objective and non-discriminatory distribution of voting rights, in particular as regards to the processes of technology selection.[221] Regulation 1025/2012 requires ESOs to ensure participation of all affected stakeholders, particularly those representing social interests or a particular group,[222] public authorities (also addressed by the OMB Circular)[223] and medium-

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215 *Id.*

216 TBT Committee Decision, *supra* note 133, annex 4, ¶ C(6).

217 REVISED OMB CIRCULAR A-119, *supra* note 149, at 9.

218 *Id.*

219 *Id.*

220 Standards Development Organization Advancement Act of 2004 (2004), Pub. L. No. 108-237, § 103(1)–(7), 188 Stat. 661 (2004).

221 Horizontal Guidelines, *supra* note 185, at 59.

222 Regulation 1025/2012, *supra* note 42, recs. 17 & 24.

223 OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, OMB CIRCULAR A-119: FEDERAL PARTICIPATION IN THE DEVELOPMENT AND USE OF VOLUNTARY CONSENSUS STANDARDS AND IN CONFORMITY ASSESSMENT ACTIVITIES ¶ 6(D) (2016).

sized enterprises (SMEs),[224] both at the policy development level and at various stages of standards development (i.e. standardization proposal, technical deliberations, submission of comments and revision processes).[225] This does not imply, however, that stakeholders should be granted voting rights for (all) these standardization phases.[226] Where ESOs operate on the basis of national delegation, the duty to involve all relevant actors lies upon NSOs.[227]

None of the frameworks explain what should be understood under the term "policy development"—even though the TBT Committee Decision and Regulation 1025/2012 accurately define standards development stages.[228] At the same time, while patent policies constitute a part of standardization activity in SDOAA,[229] it is unclear whether those are covered by the TBT Committee Decision, especially given the fact that the TBT Agreement is silent on the intellectual property issues related to standards. In the United States, some clarification was provided by the recent appeal decision of the ANSI Executive Standards Council (Exact), which confirmed that the ANSI Essential Requirements, including openness and consensus, do not apply to the development of standard-setting policies.[230]

c. Consensus, Impartiality and Balance

As established by the ISO/IEC Guide 2, a document widely used as a reference by national and international standardization bodies

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224 Regulation 1025/2012, *supra* note 42, arts. 5–7 & rec. 2.

225 *Id.* art. 5(1).

226 *Id.* rec. 23.

227 *Id.* arts. 6, 7 & rec. 2.

228 TBT Committee Decision, *supra* note 133, annex 4, ¶ C(6); Regulation 1025/2012, *supra* note 42, art. 5(1).

229 Standards Development Organization Advancement Act of 2004 (2004), Pub. L. No. 108-237, § 103(1)–(7), 188 Stat. 661 (2004).

230 *E.g.*, Nicolas Petit, *The IEEE-SA Revised Patent Policy and its Definition of "Reasonable" Rates: A Transatlantic Antitrust Divide?*, 27 FORDHAM INTELL. PROP. MEDIA & ENT. L. J. 211 (2017) (discussing that the dispute revolved around the updated IPR policy of IEEE Standards Association, whose contents and drafting process received a barrage of criticism); Nicolo Zingales & Olia Kanevskaia, *The IEEE-SA Patent Policy Update Under the Lens of EU Competition Law*, 12 EUR. COMPETITION J. 195 (2016); J. Gregory Sidak, *The Antitrust Division's Devaluation of Standard Essential Patents*, 104 GEO. L. J. 48 (2015).

and dispute settlements mechanisms,[231] a standard is by definition established by consensus,[232] which the Guide defines as a "general agreement characterized by the absence of sustained opposition to substantial issues by any important part of the concerned interests and by a process that involves seeking to take into account the views of all parties concerned and to reconcile any conflicting arguments," but that "does not imply unanimity."[233]

When referring to consensus-based standards, TBT Committee Decision further develops the requirement of meaningful opportunities, emphasizing that standards development processes should not privilege or favor particular interests, and that consensus-procedures should seek to consider the views of all parties concerned and reconcile any conflicting arguments.[234] In this context, all standard development processes should guarantee impartiality with respect to, i.e. access to the relevant information, participation and submission of comments and decision-making through consensus.[235] The latter invites for an assumption that within the meaning of TBT Committee Decision, consensus only serves as a safeguard of equality during the preparation of standards: where consensus process "should *seek to take into account* the views of all parties, impartiality '*should be* accorded.'"[236]

A similar "effort-based" obligation is maintained by ANSI, which calls SSOs to make "an effort [to resolve] all expressed objections"[237] and generally prohibits any exclusion and discrimination in standards development.[238] In particular, ANSI provides that standards development processes should (strive to) have a balance between different interest categories,[239] which should be discretely defined by SSOs and cover all materially affected parties.[240] ANSI also emphasizes the lack of dominance by

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231 THE WTO DISPUTE SETTLEMENT MECHANISM: A DEVELOPING COUNTRY PERSPECTIVE 129 (Alberto do Amaral Junior et al. eds., 2019).

232 ISO/IEC Guide 2, *supra* note 49, art. 3.2.

233 *Id.* art 1.7.

234 TBT Committee Decision, *supra* note 133, annex 4, ¶ D(8).

235 *Id.*, annex 4, ¶ D(9).

236 *Compare id.*, *with id.* at ¶ D(8).

237 *E.g.*, ANSI ESSENTIAL REQUIREMENTS, *supra* note 155, at 8.

238 *Id.* at 4.

239 *Id.* at 4–5.

240 *Id.* at 4.

any single interest category, individual or organization, meaning the exclusion of other considerations due to the leverage, strength or representation of a dominant stakeholder (group).[241] In general, no test for dominance is required, except when the dominance is claimed in writing by a directly and materially affected party.[242] In turn, the OMB Circular requires SSOs to preserve standards development processes that are balanced, provide a meaningful engagement from a broad range of parties and ensure that no single interest should dominate the decision-making.[243]

Regulation 1025/2012 specifies that in the context of ICT standards, consensus does not imply unanimity, but an achievement of the general agreement by seeking to take into account the views of all parties concerned and to reconcile conflicting arguments; consensus is typically reached when there is an absence of sustained opposition to substantial issues by affected stakeholders.[244] Furthermore, impartiality of ICT standards should be viewed in the light of technological development: standards should be neutral and stable and should not impede innovation.[245]

In short, consensus serves as an overarching requirement and encapsulates a number of other procedural principles rooted in administrative law. Reasoned and justified decisions serve to restrain the power of stronger parties,[246] while balancing stakeholders' engagement in decision-making processes, reduces the chance for a standard to be adopted over the objections of stakeholders.[247]

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241 *Id.*

242 *Id.* at 5.

243 OFFICE OF MGMT. & BUDGET, EXEC. OFFICE OF THE PRESIDENT, OMB CIRCULAR A-119: FEDERAL PARTICIPATION IN THE DEVELOPMENT AND USE OF VOLUNTARY CONSENSUS STANDARDS AND IN CONFORMITY ASSESSMENT ACTIVITIES ¶ 2(e)(II) (2016) (showing that the Circular terminology is rather simplified; as opposed to "balance of interests" or "balance of representation" in the earlier versions of the Circular, the ANSI Essential Requirements, and the SDOAA 2004).

244 *See* Regulation 1025/2012, annex II 3(b) 2012 O.J. (L 316) 29 (EU) (discussing that the definition of consensus is in regard to ICT standards).

245 *Id.* annex II (4)(c).

246 Eyal Benvenisti, *The Interplay Between Actors as a Determinant of the Evolution of Administrative Law in International Institutions*, 68 L. & CONTEMP. PROBS. 319, 326 (2005).

247 JOANNE YATES & CRAIG N. MURPHY, ENGINEERING RULES GLOBAL STANDARD SETTING SINCE 1880 60–62 (2019); ANDREW L. RUSSEL, OPEN STANDARDS AND THE DIGITAL AGE: HISTORY, IDEOLOGY, AND NETWORKS 56 (Cambridge University Press

As discussed earlier, the notion of an international standard under the WTO was somewhat complicated by the Appellate Body's ruling in *US–Tuna II*, which effectively stretched the scope of Article 2.4 TBT Agreement to *international* standards that are not based on consensus.[248] Some authors suggested that since TBT Committee Decision introduces the principles as a "best effort" requirement, it merely obliges SSOs to establish a consensus-building process.[249] Moreover, each SSO implements requirement of consensus differently: for instance, where IEEE-SA establishes a voting quorum for achieving consensus,[250] IETF merely relies on "humming" and the decisions the working groups' chairs.[251]

As in the case of transparency, informal standardization groups may fall short on impartiality and balance. W3C, which develops standards and specifications for various web technologies, is sometimes considered a "benevolent dictatorship" where the Director has the ultimate decision-making power.[252] A recent example is the decision to approve Encrypted Media Extensions ("EME") recommendation as a W3C Recommendation (read: W3C standard) despite a strong opposition and the fact that the approval vote that marked a strong departure from consensus.[253]

Whether or not consensus is always beneficial, let alone feasible, is likely to depend on SSOs' operational field and scope of activities. For example, development of web standards is strongly

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2014).

248 US–Tuna II, *supra* note 129, ¶ 353. Discussions on whether or not an international standard should be based on consensus arose even before the *US–Tuna II* report was adopted. For instance, the US argued that a standard for transportation packaging of lithium batteries established by the International Civil Aviation Organization (ICAO) was not an international standard for the reason that it was adopted by voting, and not consensus, and hence this document should not have been used as a basis for national technical regulations. *See also* Wijkstrom & McDaniels, *supra* note 69, at 7.

249 Ming Du & Fei Deng, *International Standards as Global Public Goods in the World Trading System*, 43 LEGAL ISSUES ECON. INTEGRATION 113, 134–35 (2016).

250 IEEE-SA, OPERATIONS MANUAL, *supra* note 112, §§ 5.4.3.3, 5.4.3.5.

251 *The Tao of IETF: A Novice's Guide to the Internet Engineering Task Force*, IETF, § 4.2 (2019), https://ietf.org/about/participate/tao/ [https://perma.cc/4MJR-Z9Q3].

252 *See* Jorge L. Contreras, *A Tale of Two Layers: Patents, Standardization and the Internet*, 93 DENV. U. L. REV. 853, 874–75, n.102 (2016).

253 Press Release, World Wide Web Consortium (W3C), W3C Publishes Encrypted Media Extensions (EME) as a W3C Recommendation (Sept. 18, 2017) https://www.w3.org/2017/09/pressrelease-eme-recommendation.html.en [https://perma.cc/L73F-NUNJ].

driven by technical excellence, rather than consensus.[254] But even if consensus-building may delay standards development processes, it is still believed to guarantee better outcomes in the long run.[255]

d. Effectiveness and Relevance

The Appellate Body in *EC-Sardines* held that an international standard should be regarded as ineffective and inappropriate for application when it does not accomplish the legitimate objective pursued ("ineffective") and is not specifically suitable for the fulfilment of those legitimate objectives ("inappropriate").[256] Under the TBT Committee Decision, the principles of effectiveness and relevance provide positive and negative obligations for SSOs.[257] Positive obligations imply that standards should respond to regulatory and market needs, be paced to scientific and technological development, and, ideally, be performance based; the latter is echoed in the Code of Good Practice.[258] As to negative obligations, standards should not distort the global market, affect fair competition, impede innovation and technological development, or give preference to certain countries' technical requirements.[259] The fact that these two principles are merged together again opens avenues for assumptions. For instance, the wording of the TBT Committee Decision may suggest that ineffective standards should be also considered *per se* irrelevant, or that all relevant standards are effective.[260]

To ensure that standards maintain their relevance, the OMB Circular requires agencies to utilize the retrospective periodic

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254 In other words, "the Web is, and should be, driven by technical merit, not consensus." Jeffrey Way, *A Brief History of HTML5* (Dec. 6, 2011) https://code.tutsplus.com/articles/a-brief-history-of-html5--net-23064 [https://perma.cc/Y4CN-797G] (quoting Ian Hickson).

255 Simcoe, *supra* note 33, at 331.

256 EC–Sardines, *supra* note 124, ¶¶ 259–62.

257 TBT Committee Decision, *supra* note 133, annex 4, ¶ D(10) ("should not" vs. "should").

258 *Id.* annex 4, ¶ D(11); TBT Agreement, *supra* note 42, annex 3(I).

259 TBT Committee Decision, *supra* note 133, annex 4, ¶ D(10); TBT Agreement, *supra* note 42, annex 3(D), (E).

260 TBT Committee Decision, *supra* note 133, annex 4, ¶ D(11) (" . . . international standards need to be relevant *and* to effectively respond to regulatory and market needs . . . ") (emphasis added).

review mechanism[261] and urges them to collaborate with SSOs in order to consider updates and alternatives to existing standards.[262] Regulation 1025/2012 in turn provides with regard to ICT standards, that those should be of sufficient quality to enable innovation and address market needs.[263]

The striking absence of any further elaboration on efficiency and relevance by US and EU frameworks may be explained by a simple fact that standards which do not respond to the needs of the market and the society are most likely not to be used by the industry or to be endorsed by governmental agencies as policy tools.[264] In fact, deviation from ineffective and irrelevant standards is not prohibited, although it may occur at some costs. Manufacturers that choose not to comply with an EU harmonized standard may use any other means to demonstrate conformity of their products with the essential requirements of the Directives, yet in practice, adherence to European standards appears a preferred option among economic operators.[265] Refusal by a US federal agency to use a particular private voluntary standard must be based on a valid reason, such as a standard's inconsistency with applicable laws.[266] The explanation of why an agency decided to deviate from a standard should be submitted in a written statement to the OMB.[267] Likewise, Article 2.4 of the TBT Agreement permits Members to depart from international standards when those are "ineffective or inappropriate" for the fulfillment of the legitimate objectives pursued by Members' technical regulation:[268] a lion's share of trade concerns raised in the TBT Committee deals exactly with Members' technical regulations deviating from international standards, for instance for the reason of security.

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261 Exec. Order No. 13,563, 76 Fed. Reg. 3821 (Jan. 18, 2011); Exec. Order No. 13,610, 77 Fed. Reg. 28,469 (May 2, 2010) (defining mechanisms).

262 REVISED OMB CIRCULAR A-119, *supra* note 149, § 8.

263 Regulation 1025/2012, *supra* note 42, annex II (4)(f).

264 The opposite would be at odds with the very nature of private standardization.

265 VAN LEEUWEN, *supra* note 50, at 42; Schepel, *New Approach*, *supra* note 173, at 528.

266 REVISED OMB CIRCULAR A-119, *supra* note 149, § 5.

267 *Id.* at 33–34.

268 TBT Agreement, *supra* note 42, § 2.4.

e. Coherence and Coordination

Another principle that facilitates development of effective standards is coherence. Coherence ensures optimal allocation of SSOs' resources, avoids duplications in SSOs' activities, and prevents possible contradiction among standards. To eliminate the existence of conflicting international standards, the TBT Committee Decision emphasizes the importance of coordination and cooperation between relevant international bodies.[269] In a similar vein, SSOs within the territory of one Member shall strive to achieve a "national consensus" on standards they produce.[270] ANSI calls upon SSOs to resolve potential conflicts within ANSs (and thus not within SSOs' areas and scope of work) by the means of coordination and, where possible, harmonization (again, in a context of an "effort"),[271] and notes that conflict situations should be resolved in "good faith."[272]

In the EU, coherent standardization enables EU-wide harmonization of technical requirements and supports the functioning of the Internal Market.[273] In this regard, coherence in European standardization system is ensured by the so-called "stand still" obligation, which prohibits NSOs to adopt or maintain national standards that contradict their European equivalents.[274] In view of standards relevance to the market, Regulation 1025/2012 also supports regular information exchange between NSOs, ESOs, and the Commission as tools to ensure coherence of standards across EU members.[275]

Coherence is challenging to achieve in SSOs that do not provide for sufficient transparency. In research and development intensive SSOs, coherence is almost an oxymoron: most widely accepted ICT

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269 TBT Committee Decision, *supra* note 133, annex 4, ¶ D. Although it might be suggested that the principle of coherence does not refer to standard and standard-setting processes within a single international standards body (ISB), see Delimatsis, *Global Standard-Setting*, *supra* note 134, at 317, it nevertheless guides the policies and communication of that ISB and might affect its decisions in relationship with other organizations.

270 TBT Agreement, *supra* note 42, annex 3(H).

271 ANSI ESSENTIAL REQUIREMENTS, *supra* note 155, §§ 1.4, 2.4.

272 *Id.* §§ 1.4, 2.4.2.

273 *Cf.* Regulation 1025/2012, *supra* note 42, §§ 1.5, 1.14.

274 *Id.* §§ 3.5, 3.6.

275 *Cf. id.* § 1.16.

standards were subject to fierce competition from other standardization initiatives in the early stages of their development and were selected by the market due to their technical features, costs, or compatibility with other technologies. For instance, 4G Long Term Evolution ("LTE") standards developed in the 3rd Generation Partnership Project ("3GPP") was almost overthrown by IEEE-driven Worldwide Interoperability for Microwave Access ("WiMAX")[276] and the USB technology standardized by the USB Implementers forum won the battle against Firewire, also known as IEEE 1394 High Performance Serial Bus.[277] At the same time, many SSOs and consortia have concluded agreements or maintained liaisons necessary for the minimum coordination among them.[278] Outside traditional cooperation mechanisms, effective allocation of SSOs' work is safeguarded by the fact that many companies who hold membership of multiple SSOs would send a fixed group of employees to technical meetings.[279]

f. Appeal/Review

The principles of appeal and review constitute an important part of modern administrative systems and are widely acknowledged in scholarship on transnational regulation and global law.[280] Yet, while the right of an individual affected by a decision to have it reviewed by an *independent* tribunal is essential in domestic administrative law, this is not always the case for transnational legal order, where organizations typically maintain their own adjudication or review mechanisms.[281] The reason lies in the fact that adjudicatory review of an institution's decision may disrupt

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276 Daniel F. Spulber, *Innovation Economics: The Interplay Among Technology Standards, Competitive Conduct and Economic Performance*, 9 J. INT'L ECON. L. 777, 793 (2014).

277 BARON ET AL., MAKING THE RULES, *supra* note 113, at 69.

278 To illustrate, see the list of IEEE liaisons, *IEEE Liaisons*, INST. OF ELEC. & ELECS. ENG'RS STANDARDS ASS'N, https://ieee-sa.imeetcentral.com/ieeeliaisons/ [https://perma.cc/QWY4-255Q] and the list of liaison officers for ETSI, *Liaison Officers*, EUR. TELECOMM. STANDARDS INST., https://portal.etsi.org/TBSiteMap/ee/LiaisonOfficers.aspx [https://perma.cc/98L7-WQJG].

279 As suggested by a number of industry experts, this is a common business model in many companies.

280 *Cf.* Errol Meidinger, *Administrative Law of Global Private-Public Regulation: The Case of Forestry*, 17 EUR. J. INT'L L. 47, 79 (2006).

281 Kingsbury, *supra* note 12, at 39.

interactions among its members and impede its proper societal functioning, since such independent review often lacks knowledge of the specific transaction.[282] For SSOs, a distinction should be drawn between the review of a standards content ("substantive review") and of the processes followed for a standards' development and approval ("procedural review").[283]

The principle of appeal/review is observable in all applicable standardization instruments of the US, although the same principle is not present in the EU or the WTO frameworks. The OMB Circular provides that SSOs should incorporate processes for handling procedural appeals;[284] ANSI elaborates that such processes should offer "identifiable, realistic, and readily available appeals mechanism for the impartial handling of procedural appeals regarding any action or inaction,"[285] and that consideration of appeals shall be fair, unbiased and fully address the concerns expressed;[286] SDOAA 2004 stipulates that SSOs should ensure that appeals can be filed by those parties who oppose SSOs' decisions.[287]

Under Regulation 1025/2012, technical review is only mentioned in the context of ICT specifications,[288] which leaves the door ajar for SSOs to decide whether they should provide appeal and review procedures for the decision-making processes leading to the adoption of a standard. While such procedures are indeed implemented by the three ESOs,[289] the fact that ANSI obliges all SSOs to comply with its Essential Requirement for accreditation

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282 *Cf.* Oliver E. Williamson, *Transaction-Cost Economics: The Governance of Contractual Relations*, 22 J. L. & ECON. 233, 256 (1979) (quoting Justice Rehnquist on collective bargaining agreements).

283 Such distinction is maintained for example within the system of the IEEE. *See* INST. OF ELEC. & ELECS. ENG'RS STANDARDS ASS'N, IEEE-SA STANDARDS BOARD BYLAWS § 5.2 (Mar. 2019), http://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf [https://perma.cc/3GAB-PGVQ] [hereinafter Standards Board Bylaws].

284 REVISED OMB CIRCULAR A-119, *supra* note 149, § (2)(e)(iv).

285 ANSI ESSENTIAL REQUIREMENTS, *supra* note 155, § 1.8.

286 *Id.* § 2.8.

287 Standards Development Organization Advancement Act of 2004 (2004), Pub. L. No. 108-237, § 102(5)(F), 188 Stat. 661 (2002).

288 Regulation 1025/2012, *supra* note 42, annex (II)(4)(a).

289 *E.g.*, EUR. TELECOMMS. STANDARDS INST., ETSI DIRECTIVES: STATUTES OF THE EUROPEAN TELECOMMUNICATIONS STANDARDS INSTITUTE §§ 13.4, 14.3 (Version 40, 2019), https://portal.etsi.org/directives/40_directives_apr_2019.pdf [https://perma.cc/98SS-CQDF].

purposes encourages all US-based SSOs to introduce appeal and review processes into their operational framework.[290]

g. Access to Standards on Fair, Reasonable and Non-Discriminatory Terms

The availability of standards documents is discussed under the principle of transparency; nevertheless, some standardization frameworks explicitly address access to proprietary elements incorporated into a standard or technical specification. More often than not, the applicable instruments require SSOs to implement a patent policy that is based on (fair), reasonable, and non-discriminatory (F/RAND) licensing commitments.[291] The Horizontal Guidelines offer a perfect illustration, suggesting that SSOs patent policy should require a commitment from patent-holders to disclose their essential intellectual property and license their technology on FRAND terms.[292] The OMB Circular clarifies that RAND licensing obligations[293] extend to "implementers of the standard" and not to "all interested parties," unlike it was stipulated in its earlier versions.[294] Regulation 1025/2012 explains that the FRAND principle should also cover the royalty-free licensing requirement.[295]

Inclusion and licensing of proprietary technologies into standards is not addressed by the TBT Agreement, although concerns related to intellectual property sometimes arise at TBT Committee meetings.[296] The most famous example is the discussion on WLAN Authentication and Privacy Infrastructure ("WAPI"),

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290 As such, ANSI requirements do not differentiate between SSOs producing different types of specifications, unlike Regulation 1025/2012, which seems to maintain particular procedural requirements for SSOs producing ICT specifications to be identified by the Commission for EU procurement purposes. Regulation 1025/2012, *supra* note 42, annex II.

291 *See* Contreras, *An Empirical Study*, *supra* note 76, at 3.

292 Horizontal Guidelines, *supra* note 185, ¶ 285.

293 Which the Circular explains as "a term of art in the rulemaking context." REVISED OMB CIRCULAR A-119, *supra* note 149, § 9.

294 *Id.*

295 Regulation 1025/2012, *supra* note 42, annex (II)(4)(c).

296 *See* Comm. on Tech. Barriers to Trade, *Minutes of the Meeting of 18–19 March 2015*, § 2.2.2.2, WTO Doc. G/TBT/M/65 (May 28, 2015) (on intellectual property implemented in China's guidelines for secure IT risk control mechanism in banking sector).

China's homegrown Wi-Fi standard running on a different security protocol than the standard crafted in 802.11 working group of the IEEE.[297] WAPI was developed in a closed procedure, as per applicable Chinese legislation, but embedded a number of proprietary encryption algorithms owned by Chinese companies.[298] Upon its approval in May 2003,[299] all WLAN devices marketed in China were obliged to comply with WAPI standard, which resulted in a practical nightmare for all foreign equipment vendors: in order to maintain their presence at both global and Chinese markets, wireless devices had to be equipped with technologies reading two sets of WLAN specifications.[300] On top of that, Western companies struggled to get access to essential technologies owned by Chinese firms which lacked any licensing obligations and enjoyed the full freedom of setting royalty rates.[301]

Fortunately for Western and Japanese exporters, the mandatory nature of WAPI was abandoned by Chinese government, in part following concerns expressed during the TBT meetings,[302] but also due to ISO's refusal to recognize WAPI as an international standard.[303]

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297 *See* Christopher S. Gibson, *Globalization and Technology Standards Game: Balancing Concerns of Protectionism and Intellectual Property in International Standards*, 22 BERKLEY TECH. L. J. 1403, 1435 (2007) [hereinafter Gibson] (on the WAPI case).

298 *Id.* at 1424; Comm. on Tech. Barriers to Trade, *Transitional Review Mechanism in Connection with Paragraph 18 of the Protocol on the Accession of the People's Republic of China: Questions and Comments from Japan to China*, ¶¶ 25–27, WTO Doc. G/TBT/W/270 (Oct. 10, 2006).

299 Eventually, the transition period was extended and the deadline for mandatory compliance became June 2004.

300 Gibson, *supra* note 297, at 1437.

301 Han-Wei Liu, *International Standards in Flux: a Balkanized ICT Standard-Setting Paradigm and its Implications for the WTO*, 13 J. INT'L ECON. L. 551, 595 (2014).

302 These concerns also related to the fact that China was deviating from the existing international standards on wireless local area network equipment, the ISO IEC 8802-11, and thus breaching its obligation under Article 2.4 TBT Agreement. Comm. on Tech. Barriers to Trade, *Minutes of the Meeting of 7–9 June 2006*, ¶¶ 64–66, WTO Doc. G/TBT/M/39 (July 31, 2006). *See also* Comm. on Tech. Barriers to Trade, *Minutes of the Meeting of 9 November 2006*, ¶ 97, WTO Doc. G/TBT/M/40 (Jan. 26, 2007).

303 Gibson, *supra* note 297, at 1462.

h. Concerns Developing Countries or "Weaker Parties"

The fact that effective participation of developing countries is encapsulated in a separate principle in the TBT Committee Decision, and not dealt with under the principle of openness akin to US and EU frameworks addressing the involvement of weaker parties, is no accident, given the mandate of the WTO. Under the TBT Committee Decision, this principle consists of both passive and active elements: it prohibits *de facto* exclusion of developing countries,[304] and calls upon providing technical assistance for improving their participation—which is echoed in the relevant provisions of the TBT Agreement.[305]

Even when set forth by a specific provision, the increased involvement of developing countries may have similar flaws as broad participation in general: anecdotal evidence suggests that Western companies often admit fearing the "race to the bottom" and decrease in quality of international standards as a consequence of active involvement of developing countries in SSOs' decision-making.[306] On a positive side of the ledger, participation in global standardization fora provides developing industry with a steep learning curve and in the long run, may eventually facilitate expansion of multilateral trade.

2. Observations on Procedural Safeguards

The procedural principles for standardization analyzed in this section may set different thresholds for SSOs to demonstrate compliance with particular legal requirements, but to some extent, these principles are also intertwined. Transparency underpins openness, since effective participation is impossible without access to the relevant information. Transparency also underpins coherence, allowing SSOs to coordinate their work programs and ensuring efficient allocation of standards development projects. Consensus and balanced procedures allow for the resolution of objections and facilitate consent within the industry, thus ensuring that standards are relevant, effective, and widely accepted.

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304 It is suggested that this requirement is defined in a negative manner. Delimatsis, *Global Standard-Setting*, *supra* note 134, at 318.

305 TBT Agreement, *supra* note 42, § 12.

306 This was mentioned by a number of industry experts.

Moreover, by employing vague terms such as "relevant stakeholders,"[307] only defined in Horizontal Guidelines as "all *competitors* in the market or markets affected by the standard,"[308] and, even more ambiguous, "good/reasonable time," the procedural frameworks provide SSOs with room for maneuver to adjust their governance to specialized technical activities in their operational field.

The resemblance between the frameworks may in part be explained by the observation that the procedural principles for international standardization offered by the WTO framework largely stem from western administrative requirements.[309] To compare, scholarship on transnational and global administrative law often discusses due process in the context of legitimization non-State rule-making:[310] procedural requirements then constitute normative elements that address arising legitimacy and accountability concerns of expertise-based governance[311] and make regulation more accessible,[312] ensuring that parties' positions in regulatory bargaining remain balanced.[313]

Given the abovementioned, the author suggests that applicable procedural principles should be viewed holistically and in the context of the industry field and regulatory environment in which an SSO operates. Procedural principles for standards development thus merely introduce "best practices" strategies for SSOs to escape antitrust liability, develop standards to be referenced in national regulations, or to benefit from increased legitimacy; at the same time, they may serve as effective tools to ensure that all relevant interests for a particular standardization activity are taken on board.[314]

Yet, some elements related to the current discussions on

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307 It has been suggested that what should be understood under "stakeholders" can be business or professional associations, consumers, States, and NGOs. VAN LEEUWEN, *supra* note 50, at 19.

308 Horizontal Guidelines, *supra* note 185, ¶ 281.

309 After all, the TBT provisions were drafted predominantly by the Western powers.

310 *See* Gralf-Peter Calliess & Moritz Renner, *Between Law and Social Norms: The Evolution of Global Governance*, 22 INT'L J. JURIS. & PHIL. L. 260 (2009).

311 Harlow, *supra* note 17, at 201; Cassese, *supra* note 20, at 688.

312 Harlow, *supra* note 17, at 192; Cassese, *supra* note 20, at 685.

313 Benvenisti, *supra* note 246, at 325–26.

314 Note also that many legal instruments that offer these principles are actually not binding, such as ANSI requirement, TBT Committee Decision, or Horizontal Guidelines.

standardization are strikingly missing from the analyzed legal frameworks. First and foremost is the lack of consideration regarding the copyright of private standards. While some clarity could have been offered by the principle of transparency and the requirement of "reasonable availability" of standards, implemented in the WTO and US frameworks, the threshold for reasonable availability remains opaque. ISO/IEC Guide 2 provides that standards' *public* availability is "presumed to constitute acknowledged rules of technology"[315] which may suggest that standards that are not publicly available should not, in principle, be endorsed as industry rules. This does not seem to be the case in the US standardization system, which allows incorporation of standards that are not placed into the public domain. OMB Circular explicitly refused to provide any concrete definition of the "reasonably available" requirement, referring to the OFR, but provided some guidance by mentioning which aspects should be viewed as facilitating such availability, including access to standards' summary and read-only versions.[316]

The debate on SSO's governance is also absent: the frameworks do not clarify whether the principles apply to *all* activities of SSOs, or only to technical development of standards. Yet, if the latter is the case, as ANSI suggests,[317] SSOs may argue to have wider discretion when designing their governance rules rather than when developing their standards. In theory, a standard can then be drafted following procedures that were developed in opaque and closed processes that did not represent industry consensus.

Ultimately, the question remains whether the procedural principles as currently formulated are adequate to ensure the balance of interests in ICT standardization, given their broad interpretation and the regulatory framework from which they derive.

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315 ISO/IEC Guide 2, *supra* note 49, art. 3.2.1.

316 REVISED OMB CIRCULAR A-119, *supra* note 149, § 5(f).

317 ANSI ESSENTIAL REQUIREMENTS, *supra* note 155, § 1.0 ("These requirements apply to activities related to the development of consensus for approval, revision, reaffirmation, and withdrawal of *American National Standards*.") (emphasis added).

V. Challenges in Regulating and Enforcing Due Process in the Current Landscape of ICT Standardization

Despite significant regulatory autonomy of SSOs, their processes may still be curbed by various legal instruments available under multiple jurisdictions. Yet, to assess their practical value, these procedural instruments should be reviewed in the wider scope of the legal frameworks from which they are derived. To that end, section V of this paper evaluates the extent to which each of the studied frameworks apply to the various types of SSOs and whether procedural scrutiny of SSOs' processes against the principles is attainable under the current standardization landscape.

A. Applicability of Legal Frameworks to Various SSOs

Section IV observed that the WTO, US, and EU regulatory frameworks adopt a similar approach when addressing private SSOs by formulating due process requirements as "best practices" to be further implemented by SSOs in their own process. This section will bring this analysis a step further, and discuss whether different types of private SSOs, ranging from organizations recognized in national legislation to informal platforms for stakeholder cooperation, fall within the scope of the three regulatory frameworks, which will ultimately facilitate assessing the relevance of these frameworks, and their principles, for ICT standardization.

1. WTO Law

The six principles of the TBT Committee Decision apply to international standards developed by recognized bodies; this implies that cover standardization activities of the ISO and the IEC, which TBT implicitly recognizes by referring to the definitions of the ISO/IEC Guide in its Annex 1.[318] By the same token, TBT Agreement covers standards produced by the international bodies listed in Annex A of the SPS Agreement, namely Codex Alimentarius Commission, International Office of Epizootics and International Plant Protection Convention.[319] Following the

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318 TBT Agreement, *supra* note 42, annex 1.

319 Note that unlike the SPS Agreement, TBT does provide an indicative list of standards bodies covered by the Agreement. Comm. on Sanitary & Phytosanitary Measures, *Note by the Secretariat: Effects of SPS-related Private Standards - Compilation of Replies*, annex A(3), WTO Doc. G/SPS/GEN/932/Rev. 1 (Dec. 9, 2009). Following the reasoning of the Panel in US–Tuna II, the fact that those bodies were listed by the SPS

reasoning of the Appellate Body in *US–Tuna II*, the fact that those bodies were listed by the SPS Committee which consists of whole WTO membership serves as proof as they have "recognized activities in standardization."[320] Furthermore, TBT Decision provisions are expected to cover standards set by the International Telecommunication Union ("ITU"), as this specialized agency of the UN is also likely to enjoy a status of a recognized international standards body.[321] In turn, the Code of Good Practice, while in theory covering a very broad range of SSOs, would only apply inasmuch as the SSOs explicitly accept it which, in the absence of any TBT obligation towards these SSOs, can only be ensured by the Member where the SSO is established.[322]

It appears that, despite their evident role in multilateral trade, most of the ICT standards, being industry-driven initiatives outside the recognized international standards bodies, still manage to escape the purview of WTO law and are not covered by the TBT Agreement. It has even been suggested that an implicit governmental endorsement of a private standards body could allow that government to escape its WTO obligations, unless the measure

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Committee which consists of whole WTO membership serves as proof that they have "recognized activities in standardization." Panel Report, *United States – Measures Concerning the Importation, Marketing and Sale of Tuna and Tuna Products*, 360–63, WTO Doc. WT/DS381/R, (adopted Sept. 15, 2011) [hereinafter US–Tuna II Panel Report].

320 US–Tuna II Panel Report, *supra* note 319, at 360–63.

321 Although ITU accommodates both governmental members and private parties, the former clearly prevail in their decision-making power, since contributions of private actors are limited to the Sector of their affiliation. *Collection of the Basic Texts Adopted by the Plenipotentiary Conference*, INT'L TELECOMMS. UNION [ITU], art. 3 (2015), http://search.itu.int/history/HistoryDigitalCollectionDocLibrary/5.21.61.en.100.pdf [https://perma.cc/X3BN-4R2F].

322 Partiti, *supra* note 142. It should be noted that there is another related mechanism for recommended practices for standardization, namely the ISO/IEC Guide 59 – ISO and IEC Recommended Practices for Standardization by National Bodies (2d ed., 2019). The first edition of the Guide was adopted in 1994, thus before the TBT Code of Good Practice. In 2019, the Guide was updated with recommendations for implementation of the TBT Committee Decision and the Code of Good Practice. Among other things, the new version of the Guide refers to FRAND terms (Art. 4.5.8), provides recommendations for SSOs' leadership on dealing with sustained objections (Art. 4.4.4), introduces requirements of complaints and appeals resolution processes (Art. 4.4.7), and highlights that SSOs' governance bodies and staff should act independently from those financing their activities (Art. 4.4.6); at the same time, the new version of the Guide is limited in its scope to only national bodies (Art. 1) and thus does not cover the majority of SSOs developing ICT standards.

at issue could indeed be attributed to the government.[323] Yet, private SSOs fulfill an essential function at world trade arena. In the agricultural sector, for example, private actors are key players in the development and application of standards for food safety.[324] Moreover, compliance with private standards, even when those are not adopted as technical regulations, is often a prerequisite for accessing a large number of developed countries' markets and creates confusion for exporters who already have to comply with requirements set by formal standard-setters.[325] From a purely procedural perspective, scrutiny of private standards under the principles of TBT Committee Decision is desirable to ensure that these standards are developed in a transparent and open manner and that procedural guarantees are afforded at all stages of standards development.[326]

Although WTO Members regularly express concerns regarding the absence of a coherent WTO framework for private standards,[327]

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323 Jan Wouters & Dylan Geraets, *Private Food Standards and the World Trade Organization: Some Legal Considerations*, 11 WORLD TRADE REV. 479, 485 (2012).

324 *See* FOOD & AGRIC. ORG. OF THE UNITED NATIONS & WORLD TRADE ORG., TRADE AND FOOD STANDARDS 27 (2017) https://www.wto.org/english/res_e/booksp_e/tradefoodfao17_e.pdf [https://perma.cc/WCQ6-66WE].

325 *See* Comm. on Sanitary & Phytosanitary Measures, *Note by the Secretariat: Effects of SPS-related Private Standards - Compilation of Replies*, WTO Doc. G/SPS/GEN/932/Rev. 1 (Dec. 9, 2009).

326 Mavroidis & Wolfe, *supra* note 53, at 21 (on the perils of poor standards development processes). Arguably, standards' endorsement through the WTO mechanisms also strengthens their enforcement, since such tasks as standards' implementation, monitoring and enforcement then become the matter of States, relevant WTO Committees and Dispute Settlement Bodies. *See* Filippo Fontanelli, *ISO and Codex Standards and International Trade Law: What Gets Said is Not What's Heard*, 60 INT'L & COMP. L. Q. 895, 896 (2011).

327 Comm. on Tech. Barriers to Trade, *Fifth Triennial Review of the Operation and Implementation of the Agreement on Technical Barriers to Trade under Article 15.4*, ¶ 26, WTO Doc. G/TBT/26 (Nov. 13, 2009). A few years ago, China suggested further discussion on private standards in TBT Committee; however, China's proposal to draft a TBT guide on the use of private voluntary standards was actively opposed by the US and the EU. *See* Comm. on Tech. Barriers to Trade, *Minutes of the Meeting of 15–16 June 2016*, ¶ 3.2.4.3.2, WTO Doc. G/TBT/M/69 (2016). Previously, Members have also expressed concerns under the SPS Agreement: in particular, Saint Vincent and the Grenadines were concerned that the operation of a EurepGAP scheme in relation to trade in bananas with supermarkets in the United Kingdom was not covered by WTO provisions. *See* Comm. on Sanitary & Phytosanitary Measures, *Private Standards and the SPS Agreement*, WTO Doc. G/SPS/GEN/746 (Jan. 24, 2007).

even meagre attempts to outline the basic concepts for private standardization have not been met with a great enthusiasm by the wider WTO community.[328] Currently, the discussion on private standards and their coverage by WTO law in general, and the TBT Agreement in particular, seems to have reached an impasse. On one hand, since the TBT obligations were designed for the Members,[329] extending the scope of the TBT Agreement and its principles to private SSOs would inevitably lead to increased governmental involvement in many fields that have traditionally been a matter of the private sector. This may upset the intergovernmental structure of the WTO system and provoke widespread discontent among industry. On the other hand, allowing private standards to avoid WTO scrutiny prompts far thornier questions related to the inclusiveness and openness of the multilateral trading system, where exporters can bear extra costs of the de facto rules they did not adopt or agree to.[330]

In this regard, due attention should be paid to standards for technological interoperability and their exposure to the rules of international trade. As such, the WTO does not provide for a specific mechanism for addressing technology standardization either in formal SSOs (other than the ISO/IEC/ITU and alike) or in consortia.[331] To fall within the scope of WTO law, a measure should either be a mandatory requirement ("technical regulation")[332] or a standard adopted by a "recognized" body"[333]— both are rarely the case for wireless telecommunications or Internet specifications, typically developed by industry-driven platforms.

Moreover, members seem reluctant to discuss issues related to interoperability standards in the TBT Committee. For instance, when the United States expressed concerns regarding Korea's draft regulation to mandate the standard on Wireless Internet Platform for Interoperability ("WIPI"), Korea believed that this issue should be

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328 Attempts in SPS were not crowned with success, since Members failed to agree even on the definition of a "private standard." Mavroidis & Wolfe, *supra* note 53, at 12.

329 TBT Agreement, *supra* note 42, art. 1.

330 *See generally* Mavroidis & Wolfe, *supra* note 53; Thorstensen et al., *supra* note 141.

331 Rather, the TBT Agreement addresses standards in general (unlike Regulation 1025/2012, which does provide for a mechanism for ICT standardization).

332 TBT Agreement, *supra* note 42, annex 1(1).

333 *Id.* annex 1(2).

raised under the General Agreement on Trade in Services ("GATS")[334] and not the TBT Agreement, since WIPI was "a technical interface standard that governed interconnection among networks of wireless Internet service providers," adding that the notification of the measure under the TBT Agreement was submitted merely for transparency purposes.[335] But while the GATS and the Agreement on Trade-Related Aspects of Intellectual Property Rights ("TRIPS"),[336] which covers issues related to patents, may indeed apply to telecommunications and wireless network standards, they lack the procedural framework for standards development offered by TBT Committee Decision, and hence are ineffective for procedural scrutiny of (private) SSOs.

There are, however, mechanisms to bring private SSOs under the scope of WTO law. Firstly, submitting a private sector activity to the scrutiny under a WTO Agreement is thus not an unchartered area under the WTO *acquis:* a vivid example is the WTO Antidumping Agreement, which allows States to apply measures to foreign firms.[337] Secondly, the TBT Agreement provides for the mechanisms to scrutinize standards development procedures of private SSOs against the Code of Good Practice, as long as Members where such SSOs are incorporated are willing to enforce the Code's provisions. Thirdly, arrangements that monitor compliance with the rules of international trade can be negotiated *outside* the WTO framework: suggestions to launch an international forum on private standards that will represent the interests of stakeholders and ensure better cooperation between SSOs, governments and stakeholders have previously been made by the United Nations Forum on Sustainability Standards ("UNFSS").[338] These arrangements, however, should be sufficiently flexible to

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334 General Agreement on Trade in Services, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, annex 1B, 1869 U.N.T.S. 183.

335 Comm. on Tech. Barriers to Trade, *Minutes of the Meeting Held on 20 March 2003*, ¶¶ 54–55, WTO Doc. G/TBT/M/29 (May 19, 2003).

336 Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, annex 1C, 1869 U.N.T.S. 299.

337 Mavroidis & Wolfe, *supra* note 53, at 10.

338 *See* DADUSH ET AL., WORLD ECONOMIC FORUM, WHAT COMPANIES WANT FROM THE WORLD TRADING SYSTEM 14–15 (2015), http://www3.weforum.org/docs/WEF_GAC_Trade_II_2015.pdf [https://perma.cc/WJX8-Y44S] (on suggestions of UNFSS).

preserve the advantages of industry standardization.

It may also be suggested that standards created by industry consortia may be submitted to the TBT procedural principles once they are endorsed by a recognized SSO. Arguably, compliance with the WTO framework for standardization is expected from US-based SSOs that are accredited by ANSI. These, in turn, may be both formal *and* informal bodies dealing with interoperability of telecommunications networks, standards consumer electronic equipment and design of software.[339]

2. *US and EU Law*

The role of the US governmental agencies and the European Commission in private standardization activities cannot be compared to the one of the WTO Secretariat. As such, the WTO does not partake in the meetings of technical experts (what US agencies are encouraged to do) or enjoy a Counsellor or observer status in private SSOs, nor can it propose standardization projects (which is the Commission's prerogative in the ESOs). Hence, already by participating in private standardization activity, regulators can be the watchdog of due process in SSOs, albeit they contribute to standards development on an equal footing with other stakeholders.[340]

Since the US regulatory framework does not provide for the establishment of specific bodies that develop standards for references in national laws and policies,[341] it is assumed to cover a wider range of SSOs. As is the case with the WTO framework, industry consortia will only fall under the procedural principles of OMB Circular and ANSI once the ANSI accredits them.[342] The procedural principles of Regulation 1025/2012 largely apply to the development of harmonized standards by the ESOs and NSOs and to a lesser extent, to informal ICT platforms, whose standards can

339 Examples are the Alliance for Telecommunications Industry Solutions (ATIS), Consumer Electronics Association (CEA), Dimensional Metrology Standards Consortium (DMSC), OSEHRA and MedBiquitous. *See Accredited Standards Developers*, AM. NAT'L STANDARDS INST. (Nov. 2019), https://share.ansi.org/ [https://perma.cc/69ES-HA5X].

340 This was confirmed in a number of conversations with standardization experts; moreover, the opposite does not appear from the legal documents.

341 *But cf.* Regulation 1025/2012, *supra* note 42, annex I.

342 ANSI does not appear to distinguish between consortia or formal SSOs for its accreditation purposes.

be used for the EU procurement purposes.[343]

3. *US and EU Antitrust Law*

In the US and EU, antitrust provisions governing standardization are not confined to international standards or technical regulations, and hence also apply to industry consortia and informal standard-setting groups. For this reason, SDOAA and the Horizontal Guidelines may be assumed to cover a broader range of standards and standardization platforms than the TBT Agreement or the applicable US and EU legislation, especially considering that the competition and antitrust provisions can be subject to extraterritorial application and curb anti-competitive conduct outside their jurisdictions.[344] It should be noted, however, that both SDOAA and Horizontal Guidelines limit the liability of SSOs, but not of their Members. Accordingly, individual parties participating in standards development may still be prosecuted for anticompetitive conduct that occurred in standards development.

It should be noted that the EC Horizontal Guidelines only apply to those SSOs that can be classified as "undertakings" under EU law.[345] In *Stichting Certificatie Kraanverhuurbedrijf* (SCK),[346] the CJEU found a Dutch certification institution which obliged the use of cranes and prohibited certified firms to sub-contract their activities to a non-certified firm, restraining parallel trade and creating barrier for market access, to be an undertaking.[347] In its reasoning, the Court relied on the fact that SCK carried out an economic activity akin to a private undertaking and, since certification was provided upon the payment, was also seeking

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343 *See* Regulation 1025/2012, *supra* note 42, annex II.

344 This appears from the established case law in the EU. *See* Joined Cases 89/85, 104/85, 114/85, 116/85, 117/85 & 125/85 to 129/85, Ahlström and Others v. Commission, 1988 E.C.R. 5193; and in the U.S., United States v. Aluminum Co. of Am., 148 F.2d 416 (2d Cir. 1945). Moreover, the Sherman Antitrust Act of 1890 applies to a conduct involving trade or commerce with foreign nations, when that conduct has a direct, substantial and foreseeable effect on trade or commerce in the U.S., or when foreign conduct was meant to produce and indeed produced substantial effects in the US territory. *See* Hartford Fire Ins. Co. v. Cal., 113 S. Ct. 2891 (1993).

345 Horizontal Guidelines, *supra* note 185, art. 1.1.6.

346 Joined Cases T-213/95 & T-18/96, Stichting Certificatie Kraanverhuurbedrijf (SCK), Federatie van Nederlandse Kraanverhuurbedrijven (FNK) v. Comm'n, 1997 E.C.R. II-1739.

347 *Id.* at 121–22.

profits.[348] Yet in *SELEX*,[349] the CJEU held that Eurocontrol, an international standard-setting body in the field of air traffic management, was not involved in an economic activity when developing its technical standards and hence, fell outside the scope of competition law.[350] Later, the CJEU found that the *Ordem dos Técnicos Oficiais de Contas v. Autoridade da Concorrência* (OTOC), a Portugal-based association for Charter Accountants that established the system of compulsory trainings,[351] laid down discriminatory conditions to the detriment of its competitors and hence reflected an exclusionary agreement among the members of the organizations in breach of Article 101 TFEU.[352]

How does this analysis of procedural frameworks fit into the bigger picture of regulating industry activity? Following the reasoning suggested in this section, SSOs that are not covered by the TBT Agreement will fall within the scope of US and EU regulation or—if those do not apply as well—within the US and EU competition law frameworks, provided that their standards restrict trade or market access in the US or the EU, which should not be difficult to prove considering standards subject to the discussions in this paper are widely applicable.

B. Relevance of the Procedural Principles to ICT Standardization

Procedural scrutiny of SSOs' standards development processes against the principles set forth by the applicable legal frameworks is beneficial from the perspective of many actors, in particular, stakeholders that are not widely represented in SSOs' technical committees, such as civil society and policy-makers. If private SSOs are covered by the TBT Agreement, their standards can be

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348 *Id.* at 117.

349 Case T-155/04, SELEX Sistemi Integrati SpA v. Comm'n of the Eur. Communities, 2006 E.C.R. II-04797.

350 *Id.*, ¶ 4. Earlier, the General Court said that Eurocontrol could not be considered a service provider since adoption of its standards is a legislative activity. SELEX, 2006 E.C.R. II-04797, at 61.

351 Case C-1/12, Ordem dos Técnicos Oficiais de Contas v. Autoridade da Concorrência, 2013 ECLI:EU:C:2013:127. Ordem dos Tecnicos Oficias de Contras (OTOC) allowed competing bodies to provide compulsory training but claimed certain courses exclusively.

352 *Id.* at 97. According to the Court, OTOC held a public service mission and was de facto acting in a relevant market for professional trainings of charted accountants.

submitted to the WTO dispute settlement mechanisms, including consultations between parties and adjudication by WTO Panels and ultimately, by the Appellate Body. Opening avenues to examine private standards under the WTO principles will contribute towards inclusive and transparent national technical regulations. In this regard, it can be expected that the WTO Dispute Settlement Body ("DSB") will follow the path of the US and EU Courts: rather than engaging in complex discussions on technical aspects of private standards, Panels or the Appellate Body will examine the processes followed during their standards development. The legal instruments guiding this analysis will be the TBT Committee Decision and the Code of Good Practice.

Herein lies the question, whether the WTO procedural principles formulated in the 1990s remain appropriate for contemporary standardization activity. Considering increased digitalization, cross-sectoral cooperation, and convergence of different scientific fields in which SSOs operate, the "one approach fits all" way to scrutinize standards development procedures seems futile and may even have adverse effects on the technical work of an SSO. For instance, the above-mentioned lack of transparency in ICT consortia as a result of their reluctance to reveal their work programs is in part explained by the intensely competitive environment in which those consortia operate. Unlike formal SSOs, where standards are first drafted in the technical committees and only then introduced to broader industry, consortia-developed standards are put to the market test, and the ultimate choice of the "winning" standard (which then becomes the "de facto" standard) rests upon the industry. The infamous "standards war" between the Betamax and VHS videotape formats in late 1970s and early 1980s perfectly illustrates competition between informal standardization activities.[353]

As a matter of course, increased transparency as desired by the TBT instruments and Regulation 1025/2012 will, in all likelihood, lessen competitiveness of a consortium. By the same token, greater openness of informal SSOs, although generally welcomed by civil society, is prone to reduce the decision-making speed in an informal industry group, again impairing effectiveness and competitiveness of its standards. That said, consortia, similarly to many formal

353 Michael A. Cusumano et al., *Strategic Maneuvering and Mass-Market Dynamics: The Triumph of VHS Over Beta*, 66 BUS. HIST. REV. 1, 51, 66 (1992).

SSOs, typically have other mechanisms at their disposal to ensure that their standardization activities comply with a minimum of due process requirements of transparency, openness, and participation and that the voice of the relevant stakeholders is heard. W3C, for instance, makes the charters of its working groups publicly available.[354] Bluetooth SIG provides an environment for interoperability testing ("IOP") and implements adopters' feedback on technical performance of Bluetooth specifications prior to their official release.[355]

Amid formal SSOs, the IEEE-SA offers the drafts of its standards for a public review process, albeit against a fee for the "public."[356] In the ISO and IEC, whose membership is open only to the national committees of the UN Members, the interests of certain groups of stakeholders are represented by separate organizations. This does not mean, however, that these groups do not face any hurdles: for example, many non-members representing interests of civil society and consumers have to apply for a liaison status for every ISO/IEC technical committee of its interest. In view of their limited voting rights in working groups and committees, "weaker" stakeholders are compelled to resort to lobbying, which in turn puts into question the independence of SSOs' members and hence, impartiality and fairness of SSOs' standardization activities.

Transparency and coherence within the meaning of the WTO, US and EU procedural frameworks especially gains in prominence once a standard has already established itself on the market, since it prevents duplication of standardization activities and ensures coherence among the industry. This, however, does not exempt SSOs from ensuring that their procedure is fair and balanced during the earlier stages of standards development: the opposite increases the chance to obstruct industry consensus, since those who disagree with technical features of a standard, or with procedures followed during its development, will most likely develop their own normative frameworks. W3C was founded in the early 1990s, in part as a response to time-consuming, consensus-based processes of

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354 *E.g.*, *HTML Working Group Charter*, WORLD WIDE WEB CONSORTIUM (2006), https://www.w3.org/2007/03/HTML-WG-charter.html [https://perma.cc/YTK8-QMUU].

355 BLUETOOTH SIG, SPECIFICATION MANAGEMENT PROCESS DOCUMENT § 4.3.1 (May 17, 2019), https://3pl46c46ctx02p7rzdsvsg21-wpengine.netdna-ssl.com/wp-content/uploads/2019/05/SMPD.pdf [https://perma.cc/29NH-7C52].

356 IEEE-SA, OPERATIONS MANUAL, *supra* note 112, § 5.4.5.

IETF;[357] a decade later, a group of Web browser vendors separated from W3C and founded a new group for web standards, the Web Hypertext Application Technology Working Group ("WHATWG"), following a disagreement with the W3C on technical and procedural merits.[358] This illustrates that the industry reacts despite being "locked in" by particular standards.

In this context, the WTO procedural principles fail to reflect contemporary aspects of standardization, such as increased importance of private and "informal" standards, inclusion of proprietary solutions in ICT specifications and the need to find a balance between effective and inclusive standardization processes. In contrast, US and EU frameworks, while marginally implementing the six principles of the TBT Committee Decision, provide mechanisms that are more advanced and effective in addressing private standards than those offered under the WTO framework.

In particular, national standardization frameworks are most useful when it comes to disclosure and licensing of SEPs: soft law and jurisprudence on antitrust and unfair licensing practices are well-established on both sides of the Atlantic, as well as in emerging economies such as China and India.[359] Moreover, in the US standardization system, ANSI's accreditation grants increased legitimacy to SSOs, inciting compliance with its procedural requirements; in turn, procedural enforcement in EU standardization systems is centralized and mostly occurs via the national Courts or the CJEU.

This preference towards national frameworks does not mean that the principles encapsulated in their legal instruments should be taken as a proxy for regulation of standardization activities. After all, as it was suggested in the previous sections, none of the frameworks are sufficiently clear nor efficient to encompass contemporary standards development. But even though both US and EU legal frameworks remain incomplete, their institutions

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357 Contreras, *supra* note 252 (citing Andrew L. Russell, *Constructing Legitimacy: The W3C's Patent Policy*, *in* OPENING STANDARDS 159 (Laura DeNardis ed., 2011)).

358 The main point of the disagreement was the preference of the W3C community for the XML standard, while members of WHATWG preferred to continue the improvement of HTML.

359 *See* THE CAMBRIDGE HANDBOOK OF TECHNICAL STANDARDIZATION LAW: COMPETITION, ANTITRUST AND PATENTS 263 (Jorge L. Contreras ed., 2018) (on FRAND-related disputes around the world).

appear more suitable to ensure SSOs' compliance with the principles of transparency, openness and consensus than the WTO.

VI. Concluding Remarks

Standardization is one of the most controversial and wide-ranging areas of contemporary rule-making. Despite the existence of a well-established legal framework and a significant body of research, many aspects related to industry regulation by the means of setting technical standards are yet to be explored. Especially when it comes to the balance of interests in complex standards development processes–such as the balance between accessing standards and granting SSOs proprietary rights over their creations, between monetizing patents and building new technologies on existing standards, between ensuring that societal and security interests are taken on board while innovation and technological progress continue to flourish–many issues remain unresolved. Yet, achievement of this balance is crucial, especially in times when standardization becomes global and multidimensional, and when societal concerns arise in sectors that have traditionally been driven by technical considerations, such as the ICT.[360] In this regard, failure to address all relevant interests is likely to create a situation where there will be multiple standards for the same functionality, jeopardizing the global effort to develop universally applicable standards.[361]

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360 Recently, the US Department of Justice ("DoJ") recalled the need of SSOs to ensure the balance of interests in order to benefit from SDOAA in its intervention in the case NSS Labs, Inc. v. Symantec Corporation, No. 18-cv-05711, Statement of Interest of the United States (N.D. Cal. June 26, 2019). While the Court refrained from ruling on DoJ's arguments regarding balance, this intervention as such indicates the growing interest of the DoJ with the balance in SSOs, for now at least for antitrust purposes. NSS Labs Inc. v. Symantec Corporation, No. 18-cv-05711-BLF, 2019 WL 3804679, at *1 (N.D. Cal. Aug. 13, 2019).

361 To illustrate: CDMA2000 and WDCMA, the two competing standards for 3rd Generation (3G) mobile technology, were driven by commercial interests of equipment vendors to monetize their SEPs, which cause inconveniences in standards implementation and fragmentation of the global telecom market. While some services providers used CDMA2000, others preferred WDCMA: since the latter lacked backwards compatibility with the CDMA standards series, manufacturers wishing to implement both standards had to get access to a set of different technologies, resulting in additional costs. Luis Cabral & David Salant, *Evolving Technologies and Standards Regulation*, 36 INT'L J. INDUS. ORG. 48, 49 (2014). At the time of writing, the future of universal 5G standard is rather uncertain; although the preference of governments and the industry lies in a global solution, with the current debate around Huawei, a situation where multiple regional 5G

This paper suggests that safeguarding various interests in the standardization process is a complex legal issue which can be addressed, as least in part, by the procedural principles offered by the applicable regulatory frameworks. Its further analysis reveals, however, that in case of ICT standardization, the current regulatory environment of the WTO, US and EU is not well-equipped to secure the balance of interests, firstly, because the applicable regulatory frameworks do not always apply to this particular type of standardization activity and, secondly, because these frameworks fall short of addressing current concerns related to standard-setting. At the same time, since the procedural principles discussed in this paper represent the "best effort" practices, they offer, at least in theory, a good normative framework and can be curbed to address the issues of copyrighted standard, patent licensing and societal interests in technocratic decision-making. In this regard, the takeaways of the paper should be the following:

First, even if SSOs' scrutiny against the legal framework is undesirable in a broader context, recourse to these frameworks is necessary in case standards development gravely breaches the law, for instance in case of cartel-forming or human rights violations. These issues can be successfully addressed under US and EU frameworks, which benefit from strong enforcement institutions and established jurisprudence on private standardization. As it stands now, the WTO does not provide for an appropriate forum to resolve private standardization concerns, even when these standards are harmful for a group of WTO Members, unless SSOs developing those standards have accepted the Code of Good Practice.

Second, in the effort to achieve standards' legitimacy, SSOs need to work together with regulatory agencies and governmental institutions that incorporate their standards, and the roles of regulators and private institutions should be clearly divided. The burden to ensure that standards development processes offer sufficient procedural guarantees rests with SSOs, who enjoy greater autonomy to implement "best effort" principles in the manner which is deemed most beneficial for their particular standardization activity given SSOs' membership composition, operational field

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standards will be created does not seem unlikely, although at this time, remains merely a speculation. Likewise, governmental measures targeted at prohibiting Huawei's participation in US-based SSOs, if indeed adopted, will most likely preclude open and inclusive standardization as desired by the procedural frameworks.

and the nature of their standards. Procedural principles cannot be applied in an identical manner to each and every standardization activity but, being familiar with the specifics of their industry sector, SSOs are well-positioned to scrutinize their processes against the procedural principles. In turn, whether a standard is sufficiently legitimate to exert binding obligations should appear from decision-making processes of governmental agencies that incorporate standards into their regulatory documents. In this regard, the relevant questions to ask are: is the agency's decision unbiased? Did the agency consider alternatives? Were concerns of affected stakeholders sufficiently addressed?

Such an approach suggests that "de facto" binding standards are not subjected to the legitimacy-check by governments, since they do not become binding by the force of law: recall that under both US and EU frameworks, standards can metamorphize into binding rules only by virtue of a reference in legal documents. This type of standard undergoes a different type of legitimization: once the industry decides that the standard is not fit for purpose, this standard would typically be overthrown by a superior alternative. For a long time, standardization of technologies has entrusted industry with the selection of dominant standards: governmental intervention in this process risks undermining incentives of private actors to compete at "the market for standards" and may therefore disturb the quality of SSOs' work.

Ultimately, any further discussion on balance of interests in standardization should be carried out in a broader context, taking into account international and national legal provisions on standardization as well as such aspects as the modes of standards' incorporation and SSOs' operational fields. Applying this broader lens separately to each standard will be a challenging task for the Courts. On a positive note, this approach is most likely to produce accurate and sector-specific results and to reduce ambiguities around private ownership of incorporated standards.[362]

In this regard, the issue of access to standards, incorporation of societal interests in technocratic-decision making as well as in the governance of individual SSOs form an agenda for future research in the field of standardization. This academic work, however,

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362 Such individual approach was also suggested by the United States Court of Appeals for the District of Columbia Circuit in American Society for Testing v. PublicResource.Org, Inc., 896 F.3d 437 (D.C. Cir. 2018).

should be performed with caution, and should reflect the current landscape of industry standardization as well as the regulatory needs of scientific domains in which particular SSOs operate, rather than attempting to curb the processes of each and every SSO under a single theoretical framework.